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*Information for the Defense Community*

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Dave Taylor Attended

# U.S. Army
# Simulation, Training and Instrumentation Command
# *(STRICOM)*

# U.S. Navy
# Naval Air
# Warfare Center Training Systems Division
# *(NAWCTSD)*

# U.S. Air Force
# Training Systems Product Group
# *(TSPG)*

*Present the First*

***Joint Department of Defense***

***Advance Planning***

***Briefing to Industry***

**April 30 - May 2, 1996**

**Hyatt Orlando Hotel in Kissimmee, Florida**

**Event #61M**

National Training Systems Association

An Affiliate of the American Defense Preparedness Association

# STRICOM / NAWCTSD / USAF TSPG
## ADVANCE PLANNING BRIEFING TO INDUSTRY
## AGENDA
**April 30 - May 2, 1996**
**Hyatt Orlando Hotel**
**Kissimmee, Florida**
**NTSA Event #61M**

## MONDAY, APRIL 29, 1996

**5:00-8:00 PM Registration**
Hyatt Orlando Hotel

## TUESDAY, APRIL 30, 1996

**6:30 AM Registration and Continental Breakfast**

**8:00** **Welcome**
First Joint DOD APBI on Simulation & Training
RADM Fred Lewis, USN (Ret.)
Executive Director, NTSA

**8:10** **Acquisition Reform Panel**
***Dr. Kenneth J. Oscar***
Deputy Assistant Secretary of the Army
Procurement
***Honorable John W. Douglass***
Assistant Secretary Navy for Research,
Development and Acquisition
***Mr. Blaise Durante***
Deputy Assistant Secretary of the Air Force
Management Policy and Program Integration
***Moderator: RADM Fred Lewis***

Big push to use credit cards. up to $25k purchases.

Credit card purchase up to 25k. www.acq-ref.navy.mil Acquisition Home Page. 80% of cost of operating a ship is people cost.

**10:15** **Break**

**10:30** **Acquisition Reform for Training Systems: Results of Non-Government Standards**
Integrated Product Team
***Mr. Bill Curtice***
Director of Engineering, USAF TSPG
Training Systems NGS-IPT Government Leader
***Mr. Al Gagne***
Al Gagne & Associates
NGS-IPT Industry Leader

**11:00** **Multi-Service Training Technology Roadmap**
***Mr. Stan Goodman***
Deputy Project Manager, Distributed Interactive Simulation

**11:30** **Luncheon**

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## TUESDAY, APRIL 30, 1996

| | |
|---|---|
| **1:00 PM** | **Navy Welcome, Introduction, and Business Organization**<br>***CAPT Mark Yerkes, USN***<br>Commanding Officer, NAWCTSD |
| **1:30** | **Navy/Marine Corps Aviation Programs**<br>***CAPT Tom Freeland, USN***<br>Program Director, Aviation Programs, NAWCTSD |
| **2:00** | **Surface Programs**<br>***CDR Patrick Reardeu, USN***<br>Program Director, Surface Programs, NAWCTSD<br>***CAPT Maurice Gauthier, USN***<br>Program Manager, LPD-17<br>***Ms. Connie Gregan Clavier***<br>Director, LPD-17 Logistics and Configuration Management |
| **2:45** | **Break** |
| **3:00** | **Marine Corps Programs**<br>***COL Robert Tyler, USMC***<br>Program Director, Marine Corps Programs, NAWCTSD<br>***COL Paul Hanover, USMC***<br>Director, Marine Corps Modeling & Simulation Management Office |
| **3:45** | **Undersea Programs**<br>***Mr. Leo Harris, Program Director***<br>Undersea Programs NAWCTSD |
| **4:15** | **Modeling & Simulation, $C^4I$, and Joint Programs**<br>***CAPT Gary Quick***<br>Program Director, Battle Force Programs, NAWCTSD |
| **4:45** | **Closing Remarks**<br>***CAPT Mark Yerkes, USN***<br>Commanding Officer, NAWCTSD<br>Reception immediately following. |

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## WEDNESDAY, MAY 1, 1996

| | |
|---|---|
| **6:30 AM** | **Continental Breakfast** |
| **8:00** | **USAF Welcome**<br>*Col Rou Price* ASD (JW)<br>Deputy Director, USAF TSPG |
| **8:10** | **Air Force Simulation and Training Overview**<br>*Col Rounie Stanfill, USAF*<br>Chief, Warfighting Support Division<br>Directorate of Modeling, Simulation and Analysis<br>HQ USAF |
| **8:30** | **A Path to Revolutionary Training**<br>*Mr. Bill Curtice*<br>Director of Engineering<br>USAF TSPG |
| **8:50** | **Combat Air Forces Simulation and Training Requirements**<br>*Col Steve Robertson*<br>Chief, Operations Support Division, Air Combat Command |
| **9:20** | **Air Education and Training Command Simulation & Training Requirements**<br>*Mr. Pat Bowden*<br>Deputy Director, Requirements |
| **9:40** | **Break** |
| **10:00** | **Air Mobility Command Simulation and Training Requirements**<br>*LtCol Richard Peterson*<br>Aircrew Operations and Training Division |
| **10:20** | **Air Force Special Operations Command Simulation and Training Requirements**<br>*Col Philip Gleun*<br>Chief, Operations and Training Division |
| **10:30** | **Air Force Test Range Simulation Initiatives**<br>*Mr. Neil Christianson*<br>Chief, Investments Division, AF Development Test Center |

## WEDNESDAY, MAY 1, 1996

| | |
|---|---|
| **11:10** | **Aeronautical Systems Center Modeling Simulation and Analysis Initiatives**<br>***Mr. Steve Wourms***<br>Chief Systems Engineer, Analysis Division, Directorate of Development Planning<br>Aeronautical Systems Center |
| **11:30** | **Luncheon** |
| **12:45** | **Joint Modeling and Simulation System (J-MASS) Update**<br>***Dr. Jerry Arnett***<br>J-MASS Program Manager, Directorate of Development Planning, Aeronautical Systems Center |
| **1:00 PM** | **Industry and the Technology Planning Integrated Product Team (TPIPT) Process**<br>***Mr. John Griffin***<br>Director, Development Planning, Aeronautical Systems Center |
| **1:15** | **Aircrew and Maintenance Simulation and Training Systems *R & D***<br>***Col Lynn Carroll***<br>Chief, Aircrew Training Research Division, Armstrong Laboratory |
| **1:45** | **Aircrew and Maintenance Training Systems New Business**<br>***LtCol Holly Connor***<br>Training Systems Management Division, Commodities Directorate, Ogden Air Logistics Center |
| **2:00** | **Manpower, Personnel & Training Systems New Business**<br>***Dr. Jeff Kantor***<br>Deputy Director, Human Systems Program Office, Human Systems Center |
| **2:30** | **Break** |
| **2:50** | **Training Range and Threat Systems New Business**<br>***LtCol Greg Kuntz***<br>System Program Director, Air Combat Training Systems, Aeronautical Systems Center |
| **3:20** | **Air Force Space Command Simulation and Training Requirements**<br>***LtCol John Puffenbarger***<br>Chief, Training Acquisition Branch, Directorate of Requirements |
| **3:40** | **Space Training Systems New Business**<br>***Capt John Hawkins***<br>Space Technology Planning Integrated Product Team, Directorate of Development Planning,<br>Space and Missile Systems Center |
| **4:00** | **Simulation and Wargaming Systems New Business**<br>***Mr. Guy Giroux***<br>Chief, Wargaming and Simulation Integrated Product Team Simulation, Wargaming and<br>Modeling Program Office, Electronic Systems Center |
| **4:15** | **Closing Comments**<br>***Col Ron Price, Deputy Director***<br>USAF TSPG |
| **4:30** | **Adjourn** |

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## ADVANCE PLANNING BRIEFING TO INDUSTRY
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**Kissimmee, Florida**
**NTSA Event #61M**

**THURSDAY, MAY 2, 1996**

| | |
|---|---|
| **6:30 AM** | **Continental Breakfast** |
| **8:00** | **STRICOM Overview**<br>*BG Peter Franklin, USA*<br>Commanding General, STRICOM |
| **8:30** | **Foreign Military Sales**<br>*Mr. John Daniele*<br>Project Director, Foreign Military Sales |
| **8:50** | **Logistics Outlook**<br>*Mr. Lou Sucich*<br>Director of Logistics |
| **9:20** | **Research and Development**<br>*Mr. Ed Trier*<br>Director of Engineering |
| **9:40** | **Break** |
| **10:00** | **Instrumentation, Targets & Threat Simulators**<br>Mr. Henry Jehan<br>Deputy Project Manager-Instrumentation Targets and Threat Simulations (PM ITTS) |
| **10:30** | **Distributed Interactive Simulation**<br>*Mr. Stan Goodman*<br>Deputy Project Manager, Distributed Interactive Simulation (PM DIS) |
| **11:00** | **Training Devices**<br>*COL Noble Johnson, USA*<br>Project Manager-Training Devices<br>(PM TRADE) |
| **11:30** | **Combined Arms Tactical Trainers**<br>*COL James Shiflett, USA*<br>Project Manager, Combined Arms Tactical Trainer (PM CATT) |
| **12:00** | **Luncheon** |

## THURSDAY, MAY 2, 1996

| | |
|---|---|
| **1:15 PM** | **Joint Modeling and Simulations**<br>***CAPT Drew Beasley, USN***<br>Program Manager, Joint Simulation System (JSIMS) Joint Program Office |
| **1:45** | **U.S. Army National Guard**<br>***COL Frank Cook***<br>Chief, Army National Guard Training Division |
| **2:45** | **Opening Remarks**<br>***Mrs. Patty Belvin***<br>U.S. Army Training Support Center |
| **2:50** | **USA Training and Doctrine Command (TRADOC) Overview**<br>***Mr. Bob Seger***<br>Assistant Deputy Chief of Staff for Training |
| **3:00** | **Warfighter XXI Campaign Plan**<br>***COL Dave Marlin, USA***<br>Director, Battle Command Training |
| **3:35** | **Warrior XXI Campaign Plan**<br>***COL Jim Gunlicks, USA***<br>Director, Training Development & Analysis |
| **4:10** | **Break** |
| **4:25** | **WARNET XXI Campaign Plan**<br>***COL Clark Grimsley, USA***<br>ASTC Director Device Management |
| **4:50** | **Panel (Questions & Answer) Session**<br>Moderators:<br>***BG Joe Frazar***<br>***Mr. Bob Seger*** |
| **5:30** | **Adjourn** |

*Advance Planning Briefing to Industry*

*Acquisition Reform for Training System Acquisition*

# Non-Government Standards Integrated Product Team

*NGS-IPT*

**Al Gagne - Gagne & Associates**
**Bill Curtice - ASC/YW**

**30 April 1996**

# *Overview*



- Background
- NGS-IPT Panels
- Training Systems and Devices Panel
- Key Practices
- Findings
- Ongoing Activities

**Quality Leadership Team**
**Training Systems Process Improvement Group**

*TRAINING SYSTEMS AND DEVICES*

# *COMMERCIAL ACQUISITION PRACTICES INITIATIVE*

# *Commercial Acquisition Practices Initiative*

**Training Systems & Devices Panel**

- **JOINT GOVERNMENT / INDUSTRY WORKING SUB-GROUP**
  - **Reporting To:** Sponsoring TSPIG and QLT Organizations
    Joint Technical Coordinating Group (JTCG) for TSD

- **USAF TRAINING SYSTEM PROCESS IMPROVEMENT GROUP (TSPIG)**
  - **Sponsored by:** Training System Product Group (ASC/YW, OO-ALC/LIR)

- **QUALITY LEADERSHIP TEAM (QLT)**
  - **Sponsored by:** Naval Air Warfare Center Training Systems Division
    Army Simulation Training & Instrumentation Command

- **TRAINING CORPORATIONS - VICE PRESIDENT LEVEL**

# *Participants - TSPIG / QLT*



## GOVERNMENT

- TSPG
  - ASC/YW
  - OO-ALC/LIR
- NAWC-TSD (Orlando)
- STRICOM (Orlando)

## INDUSTRY

- McDonnell Douglas Trng Syst
- Loral Akron
- Hughes/Link
- Lockheed / Martin
- Flight Safety
- Northrup-Grumman
- Reflectone
- Cubic Defense Systems
- AAI
- EER
- Loral Quintron
- Pulau
- ECC International
- SAIC

# *TSPIG / QLT Charter -*



- **Define Commercial Practices Framework**
- **Exploit Existing Commercial Training Model**
  - Use where applicable and allowed by law
  - Supplement for unique military acquisition needs
- **Define Extent To Which Implementation Possible**
  - By Changing Only Existing Practice
  - By Changing Policy and Regulation
  - By Changing Law
- **Build Briefing To Carry Forward**

# *Existing Commercial Model*

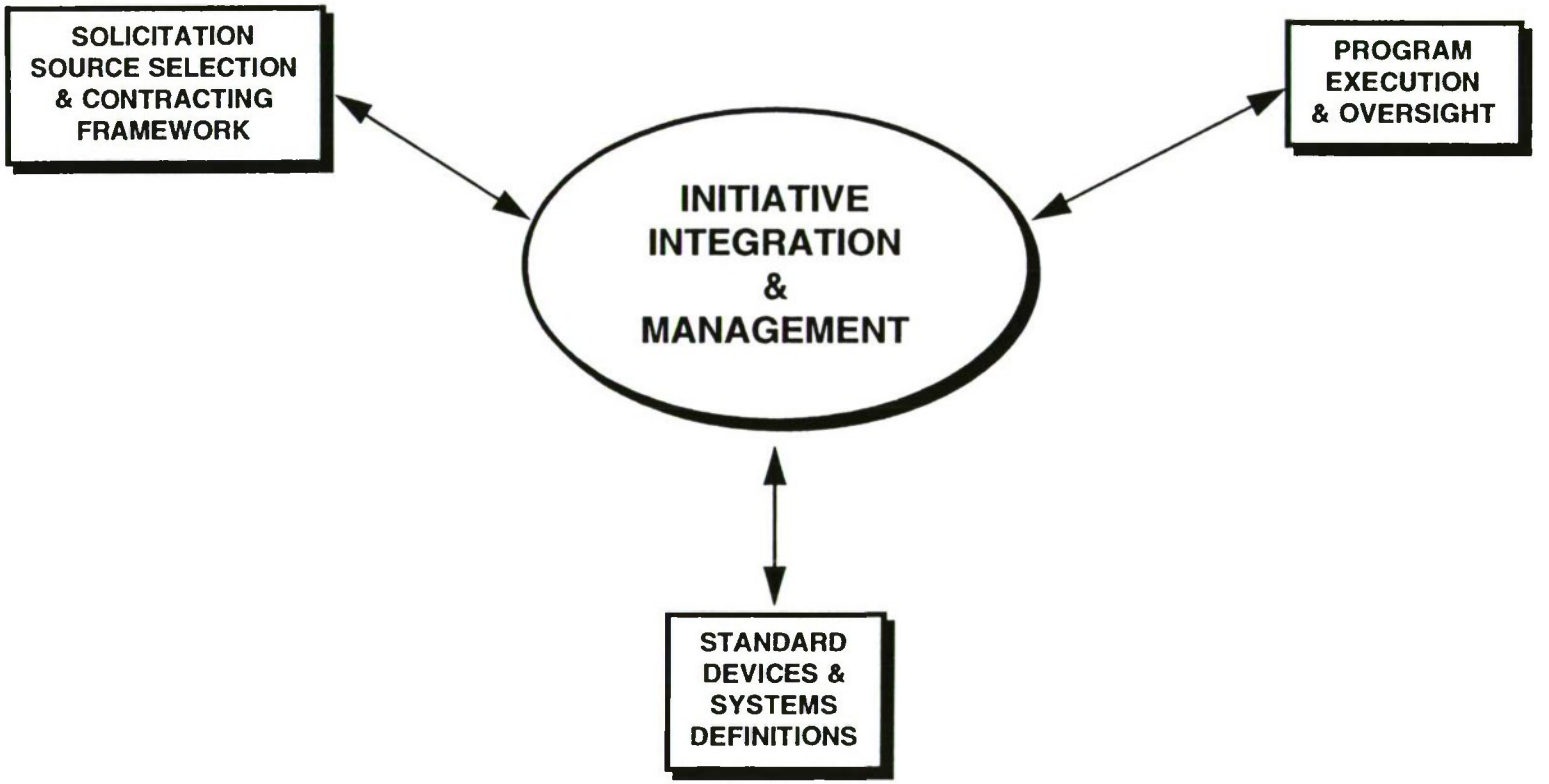


*For Training Systems and Devices*

- **FRAMEWORK BUILT ON STANDARD PRACTICES**
  - **Standard Device Definitions**
    - Establish Functional Capability
    - Establish Use and Application
    - Establish Some Basic Hardware Characteristics
  - **Standard PIDS Format**
  - **Standard Air Platform Performance Data Package**
  - **Standard Test and Certification Practices**
  - **Standard CLS Support Data Package**
- **OPERATION: Source Control, Trust, Blackball**
- **HIGH EFFICIENCY: Half the Time, Half the Cost**

# *COMMERCIAL ACQUISITION INITIATIVE*
## *for*
## *TRAINING SYSTEMS AND DEVICES*

## QLT / TSPIG



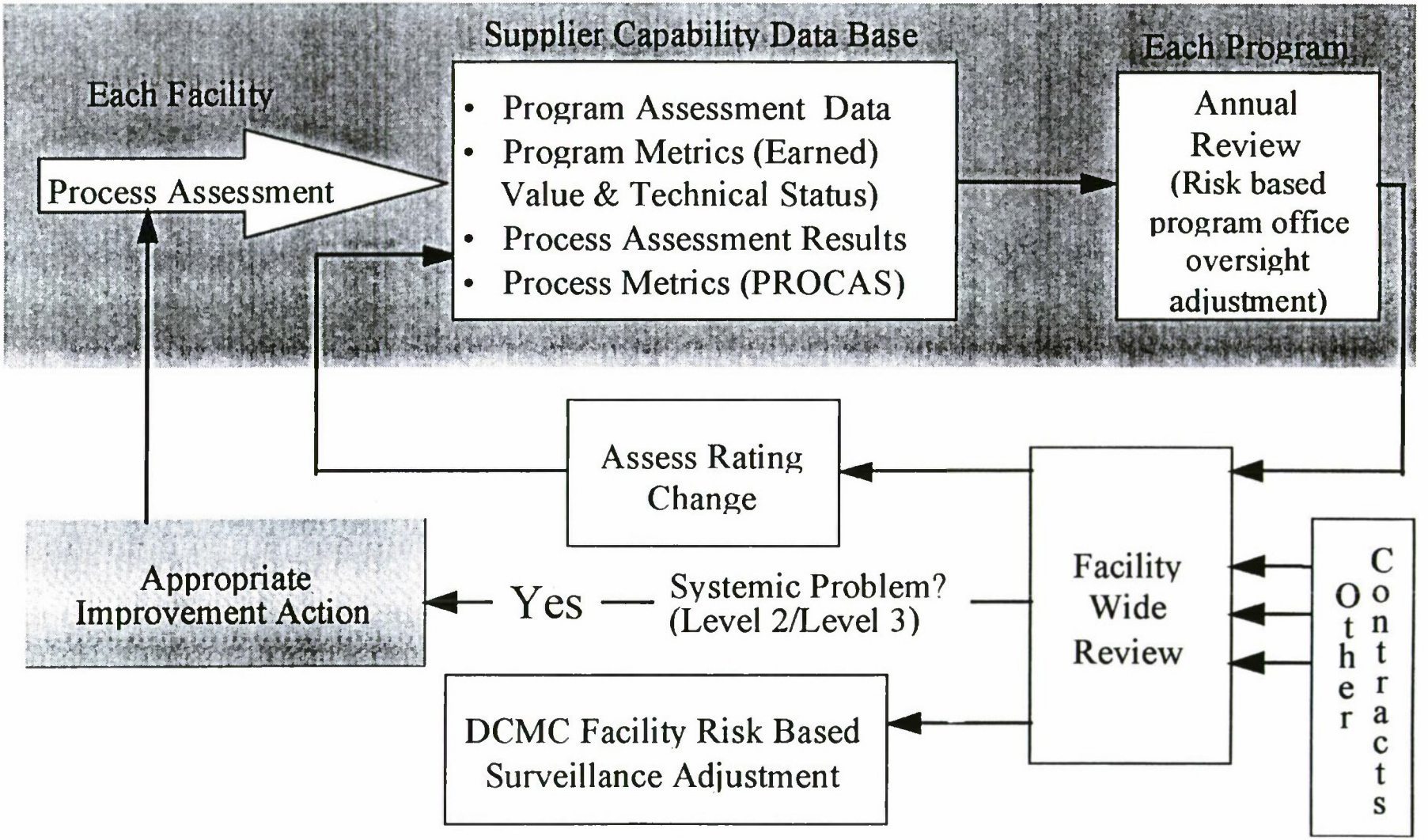
# *Non-Government Standards IPT*



- **Chartered AFMC/CC & CODSIA March 95**
- **Address the Perry Memo on Specs and Standards**
- ***.....to define a business environment which takes advantaged of the efficiencies of commercial practices to improve our military acquisition environment.***
- ***.....The environment allows suppliers to compete and be selected based upon their innovative designs and process excellence, and not government dictated practices, within the limits of public law....***
- **Industry -- DLA -- JLC**
  - **Joint Aeronautical Commanders Group**

# *NGS-IPT Risk Based Management Concept*

**Training Systems & Devices Panel**



# *Discovery!!!*



- **NGS-IPT IN FRONT OF US!**
- **MUCH BROADER THAN SPECS & STDS**
- **WE'RE PLOWING THE SAME GROUND**

# *Proposed Merger*



AFMC CHARTERED

* **NON-GOVERNMENT STANDARDS IPT**

TRAINING SYSTEMS AND DEVICES

* **COMMERCIAL ACQUISITION PRACTICES INITIATIVE**

# NGS-IPT Membership Composition

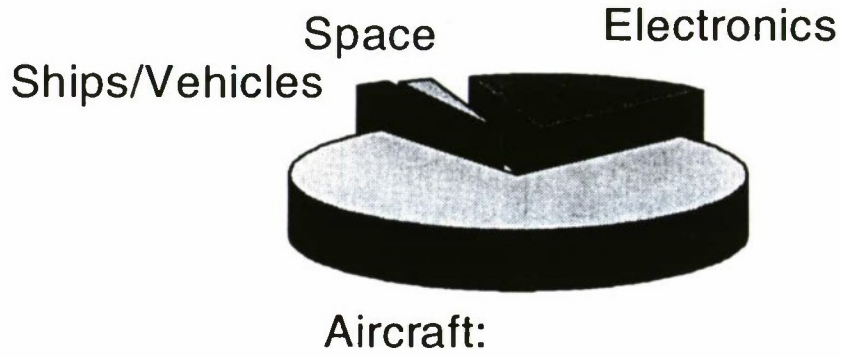


- **Mix of Business Sectors**
  - Aeronautical - Aerospace
  - Command, Control, Communication, and Computer ($C^4$ I)
- **Tri-Service Membership @ SES Level**
  - JACG Lead
- **Industry Membership @ VP, Director and Senior Manager Level**
  - Prime Contractors
  - Major Subcontractors
  - Vendors
- **Cross Functional Representatives**
  - Tech Management -- Program Management
  - Business Management -- Commodity/Reprocurement
  - Contracting -- Program Management
- **Advisers**
  - AIA/CODSIA -- Government -- Industry

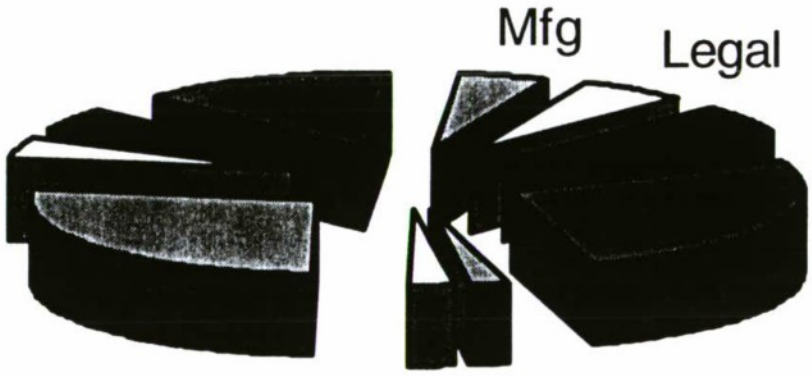
# *NGS-IPT Composition*



## Business Sectors



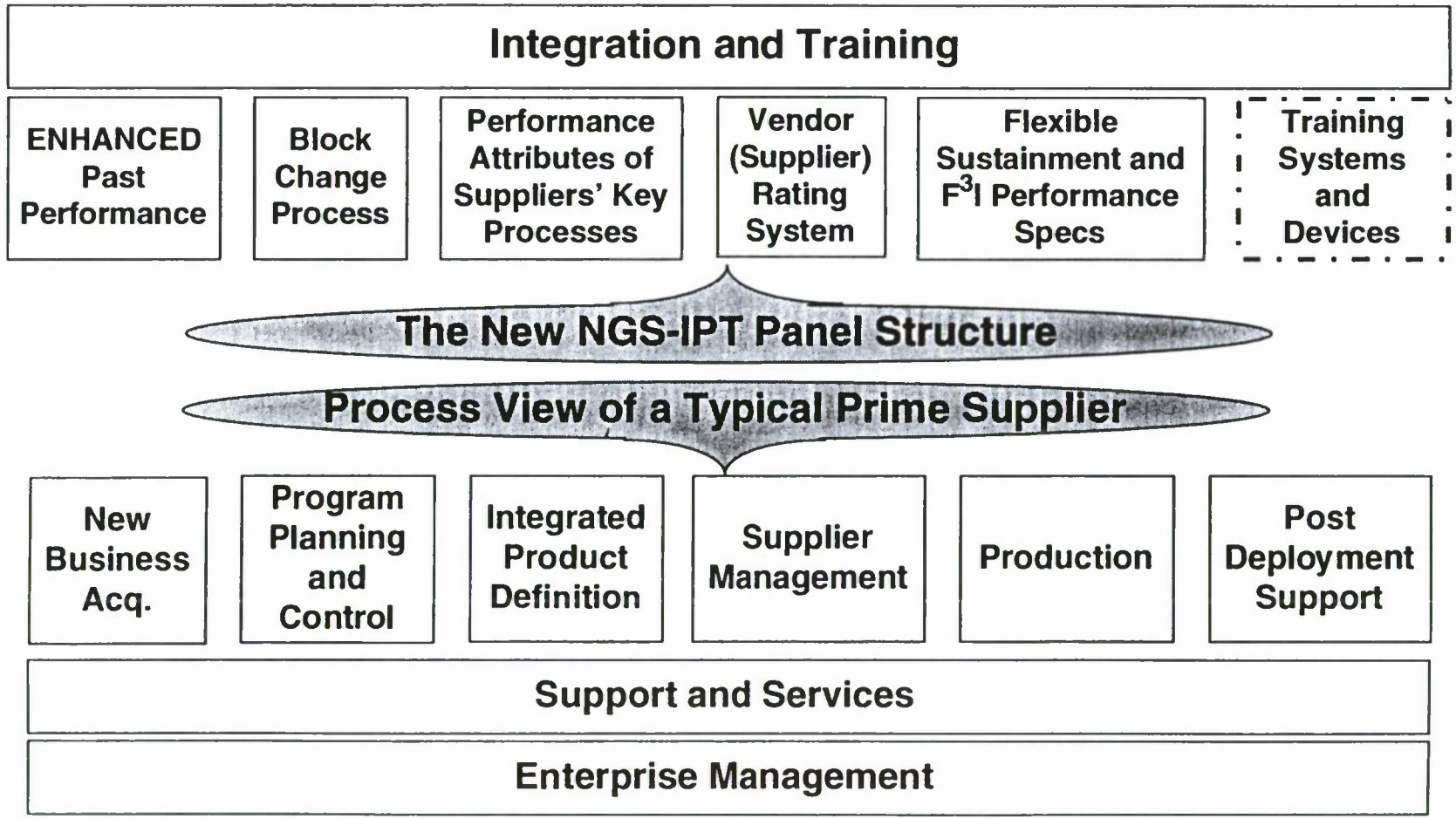

## Functional Disciplines



# NGS-IPT Implementation Structure

Training Systems & Devices Panel

- Transfer Process Ownership to Industry;
- Reinforce Integrated Product Development; and
- Develop Implementation Mechanics



# *Supplier Rating*



- Develop a prime contractor capability assessment system to be used by DoD Programs by benchmarking the best of class vendor rating systems.

- Co-Chairs
  - Government: Morris Goodrich, OO-ALC
  - Industry: Jim Edwards, Northrop-Grumman

# *Performance Attributes - Key Practices*



- **Determine specific performance attributes and candidate metrics of suppliers' key processes.**

- **Co-Chairs**
  - **Government: Gary Adams, ASC/ENSI**
  - **Industry: Keith Adrien, GE**

# *Block Change*



- **Product: Develop procedure for implementing plant-wide changes to processes, converting from MIL-STD to commercial/company/industry processes, across multiple contracts, for multiple DOD customers *and other applicable government agencies.***

- **Co-Chairs**
  - **Government: Leantha Sumpter, NAVAIR**
  - **Industry: Nick Kuzemka, Lockheed Martin**

# *Enhanced Past Performance*



- **Product: Develop implementation plan and the mechanisms to expand use of past performance as discriminator in formal source selection.**

- **Co-Chairs:**
  - Government: Dick Findley, NAVAIR
  - Industry: Paul Graves, Boeing

# *Flexible Sustainment - F³I Specs*



- **Product: Build a tactical implementation plan including acquisition strategy options for flexible sustainment using F³I specs in a NGS environment.**

- **Co-Chairs:**
  - Government: Captain Bruce Hawk, NAVAIR
  - Industry: Frank Goodell, Boeing

# *Integration and Training*

Training Systems & Devices Panel

- Integrate effort of other panels into a consistent acquisition approach and develop accompanying training modules.

- Co-Chairs:
  - Government: John Halpin, SES, ASC/EN
  - Industry: Jim Sinnett, McDonnell Douglas

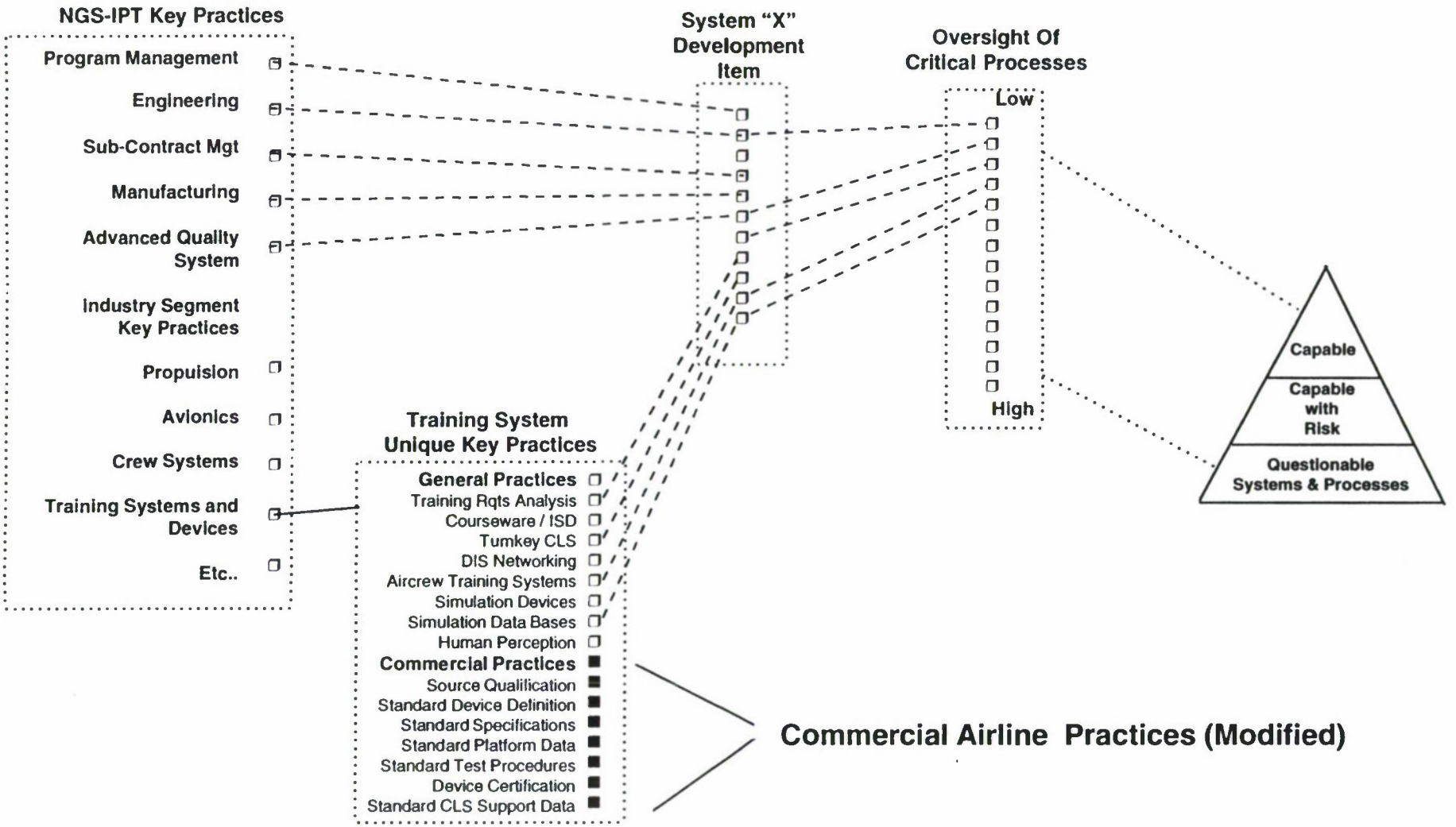
# *Rationale For Merger:*



- **Extensive common ground**
  - Purpose
  - Results
  - General Approach
  - Similar scope on a reduced scale
- **NGS-IPT On Faster Train.....Same Up- Brief Path....With better steam**
  - Reduce confusion with single approach
  - United front, better use of resources
  - Need to be compatible
- **Existing Commercial Practices**
  - Training systems currently rely on commercial industry
    - HW and SW
    - Development processes (modified HW/SW/CW)
  - Commercial airlines (IATA) model in place
- **Training Systems are Microcosm of Total Weapon Systems**
- **Have unified, tri-service, government - industry support base**

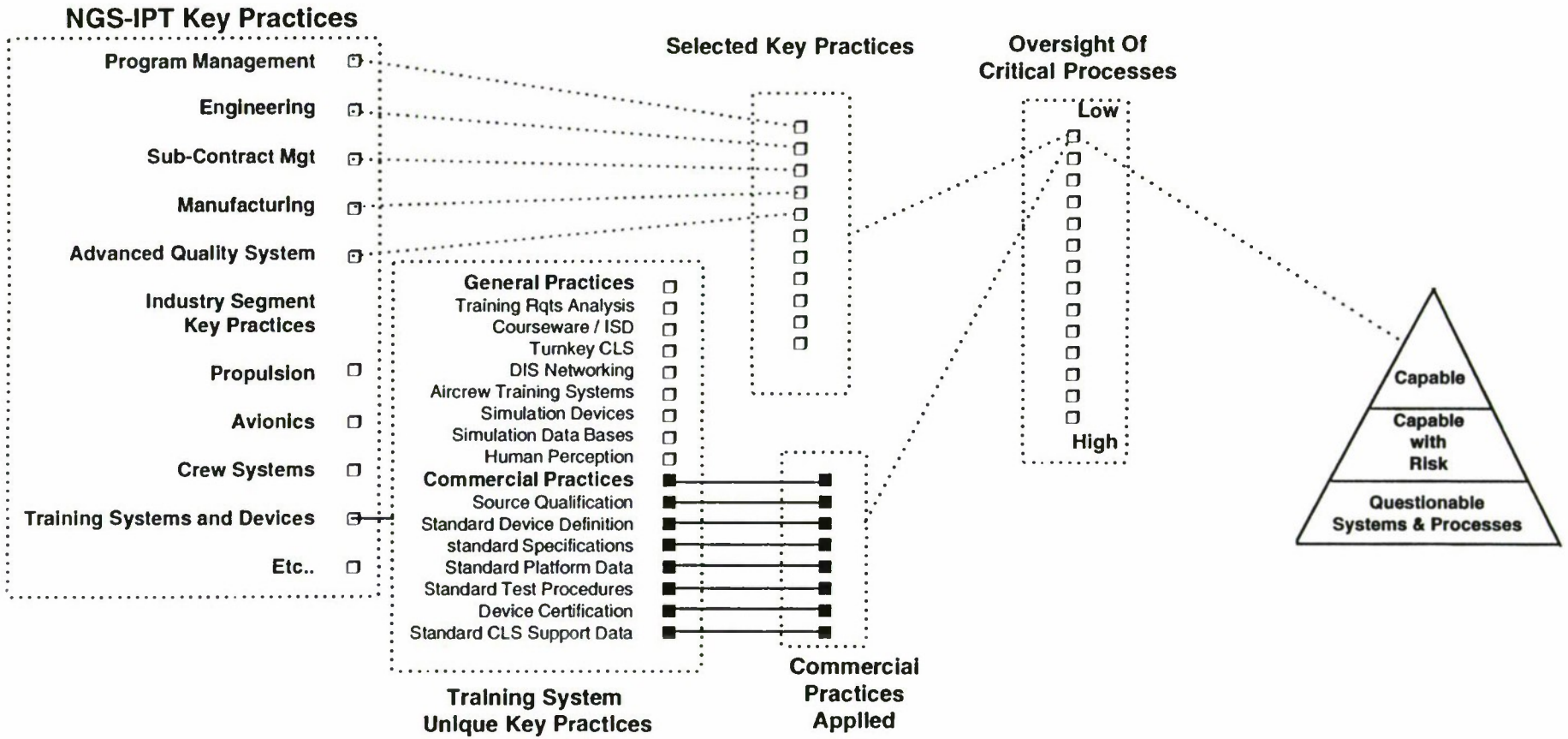
# NGS-IPT Application Concept

**Training Systems & Devices Panel**



# *Application with Commercial Practices*

**Training Systems & Devices Panel**



# *Role: Training Systems & Devices Panel*



- **Lead Industry Segment - Application of NGS-IPT Concept**

- **Tailor & Apply NGS-IPT Practices For Acquisition of:**
  - Training (Guaranteed Student - Through-Put)
  - Training Systems (Integrated - Devices, Courseware, ISD)
  - Training Devices (Simulators, Maintenance Trainers)
  - Device Sub-systems (Visual, Radar, EW)

- **Insure Training System Development Needs Incorporated**
  - NGS-IPT Functional Flow for Weapons Systems

- **Incorporate Option: Commercial Practices, Airline Style**

- **Support Other Panels**
  - Key Practices
  - Core Competencies

# *Training Systems and Devices*

**Training Systems & Devices Panel**

- **Product: Develop a comprehensive implementation plan to apply NGS-IPT concepts to the Training/ Simulation Industry as a first trial case.**

- **Players:**

| Government | | Industry | |
|---|---|---|---|
| Walt Chambers | STRICOM | George Burgess | Lockheed Martin |
| Jim Clemens | NAWC-TSD | Budd Conyers | ECC |
| **Bill Curtice** | **ASC/YWE** | **Al Gagne** | **Hughes Link** |
| Paul Larsen | OO-ALC/LIK | John Little | Lockheed Martin |
| Paul Little | NAWC-TSD | Sam Malene | Loral-Akron |
| Larry Streadbeck | OO-ALC/LIR | Dick Walter | Loral - Akron |

# *Commercial Practice Option*



- **Existing Commercial Practice Used By Airlines**
- **Applicable For Some Military Acquisitions**
- **Supported by FAA, IATA**

- **Significantly Streamlines Acquisition Practice**

- **Based On Standard Practice**
  - Device Definitions
  - Prime Item Development Specifications Format
  - Weapons System Platform Data
  - CLS Support Data Package
  - Test and Certification Procedures

# *Key Business Practices*

- **Build Small Quantities**
- **Concurrent Development**
- **Delivery before platform**
- **Design Data Sourcing**
- **Commercial Airline Practice**
  - Standard Device Definitions
  - Standard Platform Data Package
  - Standard Test Procedures
  - Standard Development Spec Format
  - Standard CLS Data Package

# *Core Competencies*

**Training Systems & Devices Panel**

- **Instructional System Dev.**
- **Training Requirements Analysis**
- **Courseware Development**
- **Training System Integration**
  - Teaming, Software Specialties
- **Aircrew Simulator Development**
- **Environmental Simulation**
  - Real World Database
  - Leading Edge Visual/EO
  - Distributed Interactive Simulation (DIS)
- **Distributed Simulation (Network)**
- **Maintenance Training Devices**
- **CLS Competencies**
  - Training Delivery & System Operations
  - Maintenance & Modifications

# *Approach Comparison*



| | CHARACTERISTICS | LIMITATIONS |
|---|---|---|
| COMMERCIAL | ■ Rapid Award<br>■ Minimal Buyer Oversight<br>■ Little Schedule Risk<br>■ Minimum Buyer Resources<br>■ Completely Performance Based<br>■ Leverages Airline Industry Investments<br>■ Benefits from FAA/Ind Process Maint.<br>■ System strongly supports device acquisition | ■ Not suited to programs with:<br>• Floating Functional Requirements<br>• High Risk Development<br>■ Does not incorporate ALL key prccesses<br>• Therefore.... not applicable to buys requiring specialized processes<br>■ Optimized for aeronautical training sector only- may not be suited for other sector buys |
| NGS-IPT | ■ Deals with ALL bidders<br>■ Modulates oversight with perceived risk<br>■ Supports all training sectors | ■ Full source selection required<br>■ Significant Overhead Costs<br>■ Longer delivery schedules - allow for increased oversight & approval cycles |

# *Key Practices Definition*



- **Offered *In Addition* To Core Processes of the NGS-IPT**

- **Built Upon Core Processes**
  - Program and Data Management
  - Systems Engineering
  - Advanced Quality Systems
  - Manufacturing
  - Procurement & Sub-Contract Management
  - Logistics Support & Sustainment

- **For Each:**
  - A Description of the Key Practice
  - Contractor Attributes Required to Successfully Apply
  - Criteria for Successful Execution

# *TSD Key Practices*



- **Training System Development and Integration**
- **Training System Requirements Analysis**
- **Courseware Development**
- **CLS Competencies**
  - Systems Operation (TSSC)
  - Training Delivery; Student Through-Put/TMS/Instruction
  - Maintenance
  - Modifications
- **Environmental Simulation**
- **Simulation Devices**

# *Findings:* *(Individuals & Government Panel Members)*



- **Adopt the NGS-IPT Acquisition Framework**
- **Use of Commercial Practices**
- **Competition in Contracting Act (CICA)**
- **Weapon System Design and Performance Data**
- **Use of Ada for Software Development**

# *NGS-IPT Acquisition Framework*



## ■ OBSERVED:

- **Consistent With Training Industry Commercial Practices**
  - $F^3I$
  - Vendor Ratings
  - Flexible Sustainment
  - Performance Based Requirements
  - CLS
  - Key Supplier Processes
  - Risk Based Oversight

## ■ RECOMMENDED:

- **That Industry Members Support the NGS-IPT Recommendations**
- **That Service Acquisition Arms Adopt the NGS-IPT Practices**
  - Apply Immediately For New Business
  - Support Block Change For Existing Contracts

# *Commercial Practice*



- **OBSERVED:**
  - **Industry Has Well Established, Robust, Performance Based System**
  - **Can Support Military Acquisition**
    - Expand To Meet Military Unique Requirements
    - Apply Directly For Some Systems

- **RECOMMENDED:**
  - **Use of Commercial Practices Where Applicable**
  - **Use Of Commercial Documentation Practices to Military Acquisitions**
  - **Pilot Program**

# *Competition in Contracting Act*



## ■ OBSERVED:

- **Best Commercial Practice and CICA Inconsistent**
- **Appropriately Structured Vendor Qualification... If Supported By Law..**
  - Eliminate Frivolous Submittals by Non-qualified Suppliers
  - Reduce Proposal Costs
  - Reduce Government Manpower in Source Selection
  - Maintain Qualified Competition
- **HR 1670 Supports CICA Changes**

## ■ Recommended.....IF HR 1670 Enacted Into Law:

- **Formation of Government/Industry Team**
- **Define Vendor Qualification Procedures Based on Language of Law**

# *Weapon System Design & Performance Data*



- **Timely Availability Crucial To Trainer Development**
- **Most Contracts Suffer Late Deliveries**
- **Trainer Concurrency Affected**
- **Life Cycle Platform Data Delivery Inherent In Commercial System**

- **Recommended:**
  - **High Priority Be Given to Timely Procurement of Weapon System Platform Data**

# *Use of Ada For Software Development*



## ■ OBSERVED:

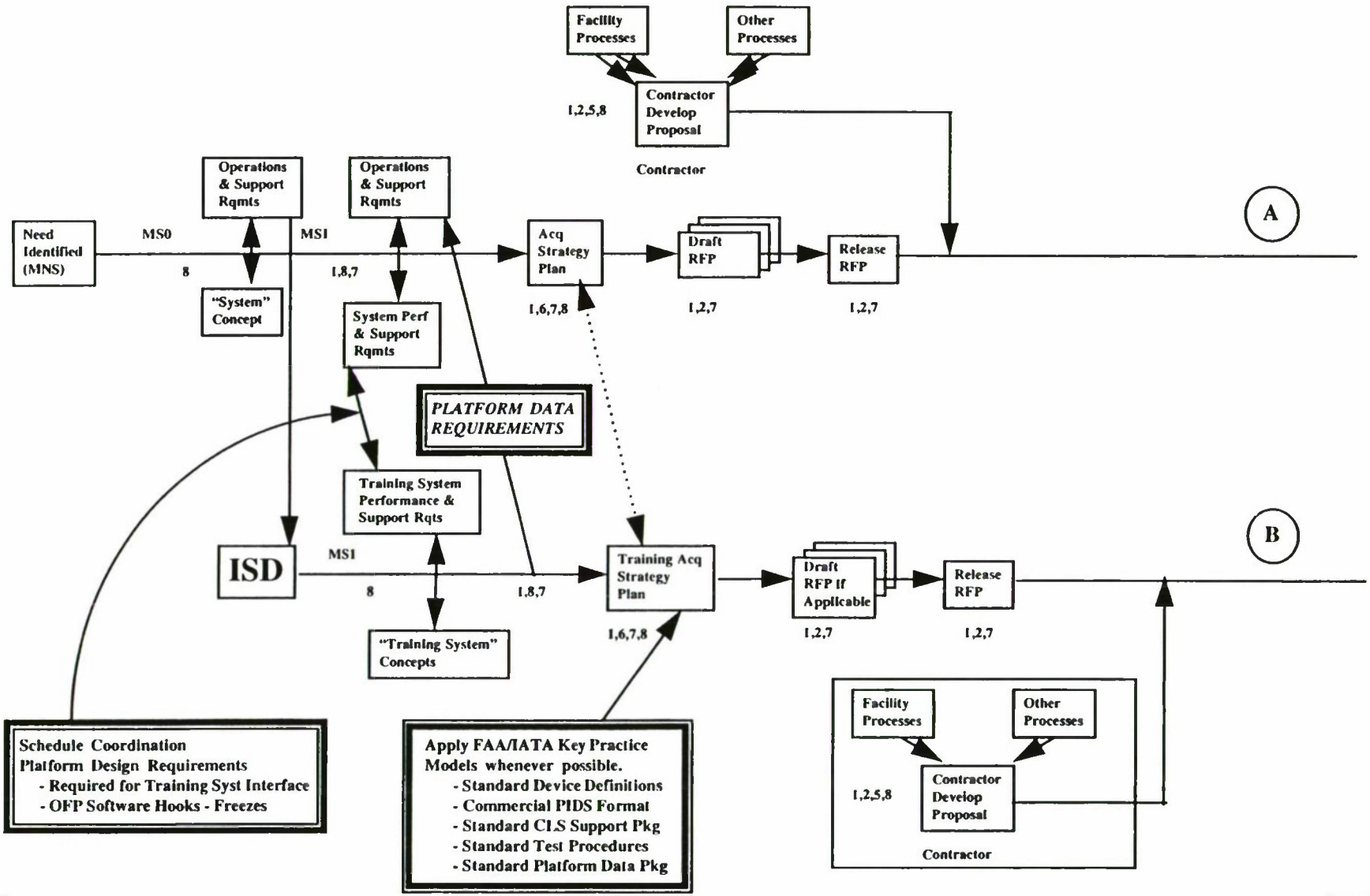
- **Commercial Practices Based On Commercial Software Languages and Environments**
  - C++
  - Object Oriented Environment
- **Quality of Commercial Environments Now Surpass Ada**
  - Efficiency
  - Utility
- **All Systems Now Under CLS**
- **Developers Should Be Given Latitude**
  - Select Language and Environment
  - Optimize Best Life Cycle Cost

## ■ RECOMMENDED:

- **Revision of Policy - Support Optional Use of Commercial Standards**

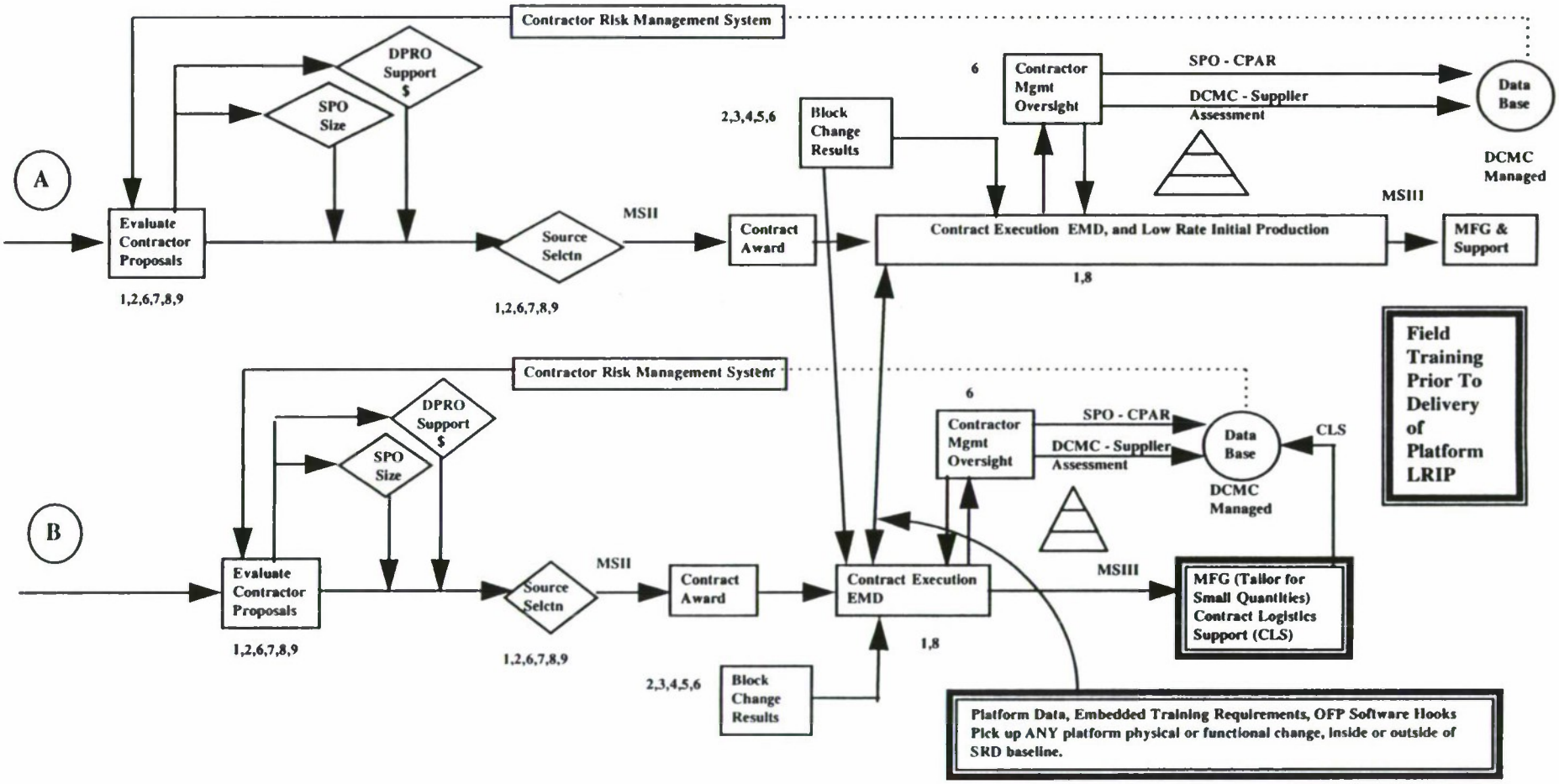
# *Development Hooks*

**Training Systems & Devices Panel**



# Development Hooks





# *Progress?*



- NGS-IPT Implementation
- Block Change Proposals
- TSPG Revised Practices Policy
- Omnibus Contracting > push for more.
- ...
- ...

- Cultures Change Slowly

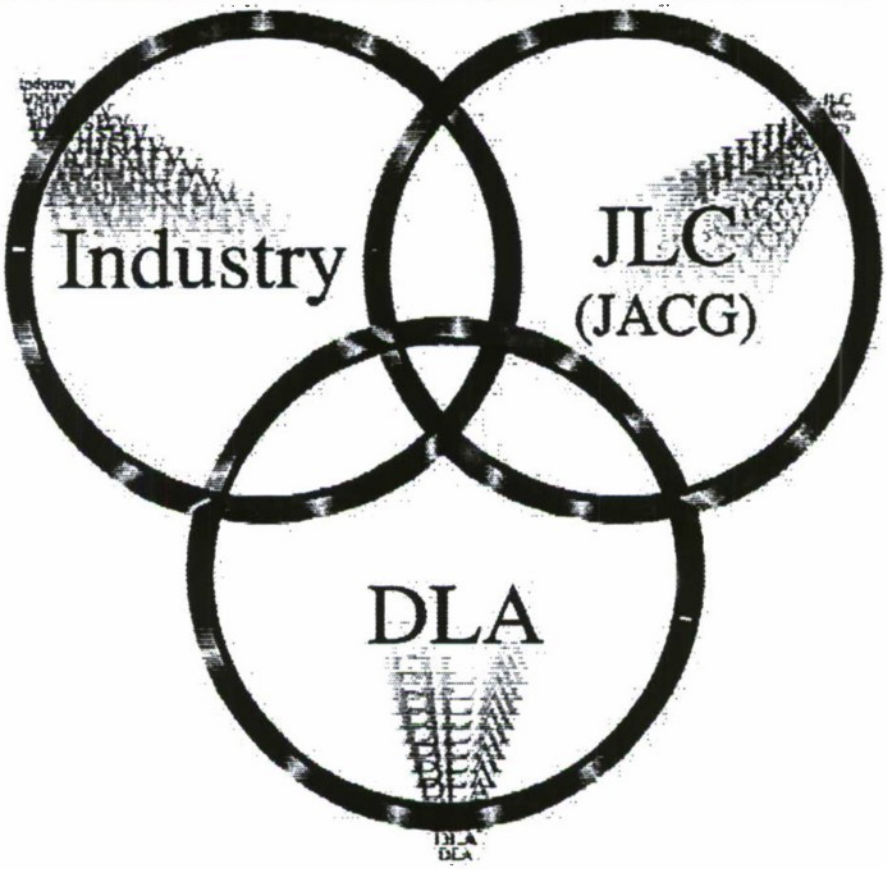
# *Final Report*



- **Published 29 February 1996**
- **Training Systems and Devices Panel - Appendix M**
- **Available As Hypertext File**
  - Adobe Acrobat
  - NGSRPT.pdf
- **Two WWW URL Addresses**
  - http://www.wpafb.af.mil/ngs/
  - ftp://ftp.wpafb.af.mil/pub/sys_eng_docs/NGS/
- **Last Resort:** Bill Curtice, 513-255-4591 x235, CURTICWL@ASC-YW.WPAFB.AF.MIL

# JOINT AERONAUTICAL COMMANDERS GROUP

# Non-Government Standards




# Integrated Product Team

FINAL REPORT
29 FEBRUARY 1996

# APPENDIX M

# TRAINING SYSTEMS AND DEVICES PANEL

## Table of Contents


1.0 INTRODUCTION. ..... 3

2.0 HISTORY AND BACKGROUND. ..... 3

3.0 ROLE OF THE TRAINING SYSTEMS AND DEVICES PANEL IN THE NGS-IPT ..... 4

4.0 UNIQUE CHARACTERISTICS OF THE TRAINING SYSTEMS INDUSTRY ..... 4

5.0 TRAINING INDUSTRY COMMERCIAL PRACTICES ..... 5

5.1 The Commercial Environment ..... 5

5.2 The Commercial Infrastructure. ..... 6

5.2.1 Platform Data. ..... 7

5.2.2 CLS Support Package. ..... 7

5.2.3 Acceptance Test Procedures/Device Qualification. ..... 7

5.3 Comparison: The NGS-IPT Framework with Existing Commercial Practice. ..... 7

6.0 KEY BUSINESS PRACTICES FOR THE TRAINING SYSTEMS INDUSTRY. ..... 8

6.1 Key Practice #1: Training System Development and Integration. ..... 9

6.2 Key Practice #2: Training System Requirements Analysis. ..... 10

6.3 Key Practice #3: Courseware Development. ..... 10

6.4 Key Practice #4: CLS Competencies. ..... 11

Sub-Practice: Systems Operations (TSSC Operations). ..... 11

Sub-Practice: Training Delivery; Student Through-Put/TMS/Instruction. ..... 11

Sub-Practice: Maintenance. ..... 12

Subpractice: Modifications. ..... 12

6.5 Key Practice #5: Environmental Simulation ..... 13

Attribute #1. ..... 13

Attribute #2. ..... 14

Attribute #3. ..... 14
6.6 Key Practice #6: Simulation Devices ..... 14
7.0 FINDINGS AND RECOMMENDATIONS ..... 15
7.1 The NGS-IPT Recommended Acquisition Framework ..... 15
7.1.1 Finding ..... 15
7.1.2 Government Members' Recommendation ..... 15
7.2 Commercial Practices ..... 15
7.2.1 Finding ..... 15
7.2.2 Government Members' Recommendation ..... 16
7.3 Competition in Contracting Act (CICA) ..... 16
7.3.1 Finding ..... 16
7.3.2 Government Members' Recommendation ..... 16
7.4 Weapon System Design and Performance Data ..... 16
7.4.1 Finding ..... 16
7.4.2 Government Members' Recommendation ..... 16
7.5 Use of Ada for Software Development ..... 17
7.5.1 Finding ..... 17
7.5.2 Government Members' Recommendation ..... 17
8.0 APPLICATION OF NGS-IPT CONCEPTS ..... 17

**Figures**

Figure M-1. NGS-IPT Framework and Flow of Activities ..... 18

**Tables**

Table M-I. Comparison of Full Commercial to NGS-IPT Business Practices ..... 8

# 1.0 INTRODUCTION.

The Training Systems and Devices Panel (TSDP) addressed application of the NGS-IPT framework to the acquisition of training systems and devices. This report reflects the observations, advice, and opinions of individual members of the panel, and in some cases the recommendations and/or consensus of the Government members of the panel. The report does not indicate, describe, or accept, and should not be interpreted as indicating, describing, or accepting, any group deliberations or discussions as a source of agreement, consensus, advice, or recommendations of the group as a whole. Sections following are:

2.0 Panel History and Background

3.0 Panel Role in the NGS-IPT

4.0 Unique Characteristics of the Training Systems Industry

5.0 Description of the (existing) Commercial Practices Option

6.0 Key Business Practices of the Training Systems Industry

7.0 Findings and Recommendations

8.0 Application of NGS-IPT concepts to training acquisitions.

# 2.0 HISTORY AND BACKGROUND.

The Training Systems and Devices Panel was originally formed in March of 1995 as a joint government-industry Commercial Acquisition Practices Initiative Team under the auspices of the Air Force Training System Product Group, the Naval Air Warfare Center-Training Systems Division, and the Army Simulation, Training and Instrumentation Command. The team was chartered to define and analyze commercial acquisition practices used by government and industry, to identify and prioritize cost drivers, and to recommend changes. In June 1995 the Commercial Practices Initiative was merged into the Non-Government Standards Integrated Product Team as the Training Systems and Devices Panel. Original team size was reduced from 38 participants (20 Industry, 18 Government) to a core team of 12 people. The panel re-focused it energy on issues concerning application of the NGS-IPT concepts within the training systems industry segment. See appendix for list of participants.

## 3.0 ROLE OF THE TRAINING SYSTEMS AND DEVICES PANEL IN THE NGS-IPT.

The Training Systems and Devices Panel assumed five core responsibilities. As the first "product" area represented on the NGS-IPT, it became the lead industry segment for application of IPT policies and concepts. Each was considered as it would apply to the acquisition of:

- Training: Training based on guaranteed student qualifications and system through-put levels.
- Training Systems: Integrated systems comprised of training devices, courseware, instructional materials, etc.
- Training Devices: Flight simulators, maintenance trainers, computer based interactive trainers, etc.
- Device Subsystems: Visual Image Generators, Radar Landmass Simulators, Threat Simulators, Motion, etc.
- CLS: Contract Logistics Support; the maintenance and modification of any installed training systems, equipment, devices, etc.

The NGS-IPT functional flow was examined, and determined to be sufficient to the needs of the training systems segment. The panel identified interrelational "hooks" between the weapon platform development process and the training system development process. Individual panel members served as advocates for selective application of existing commercial acquisition practices for flight training devices, the same commercial practices used by the airlines, and supported by the FAA, the International Airline Transport Association (IATA), and the International Civil Aviation Organization (ICAO).

## 4.0 UNIQUE CHARACTERISTICS OF THE TRAINING SYSTEMS INDUSTRY.

The following practices characterize the training systems industry:

Commercial Fabrication: Most military training equipment and system developments are now based on use of commercial off-the-shelf (COTS) subsystem elements. In most cases, the computers, network interface units, cockpit controls and displays, visual display systems, motion platforms, etc. selected by device developers are strictly COTS. In a larger sense, training device hardware elements are becoming commodities. Development challenge and risk for both systems and devices will lie in development of software and the transport and handling of system data.

Production: Most training systems and devices are acquired and produced in small quantities; devices are typically built a few at a time. Most training device programs have no "manufacturing" phase.

Concurrent Development: Training device developments usually start after the weapon platform has been defined (typically at the mid-DEMVAL phase). However, training device delivery is normally required prior to delivery of the weapon platform. Hence, trainer development cycles are very short when compared to the weapon system.

Design Data Sourcing: Training device and system developers are totally dependent on availability of weapon system platform design and performance data to support training device design and test. Timely availability of such data is crucial when concurrent development and early delivery are required. Commercial airframe suppliers view the timely provision of such data (to training system developers) as a necessary priority to meet overall business objectives; however, military system program offices often take a more narrow view, and neglect or defer acquisition of required platform data, making concurrent development (necessary to meet military training objectives) difficult or impossible.

Use of Commercial (Airline) Practices: Airlines use an established commercial system for acquisition of training devices. The military services have yet to embrace this acquisition approach. See section 5.0, below.

## 5.0 TRAINING INDUSTRY COMMERCIAL PRACTICES.

Airlines around the world acquire training devices and systems using an established acquisition system supported by the Federal Aviation Agency (FAA) the International Airline Transport Association (IATA), and the International Civil Aviation Organization (ICAO). This commercial system is built on the use of five standard documents which address training device performance requirements, device design specifications, air platform design and performance data, test and certification procedures, and contract logistics support data. Government members of this panel recommend the NGS-IPT acquisition framework support a "toggle" or "option" to apply such commercial practices where and when applicable. Panel members believe some aspects of the commercial system can be applied to military buys without the need to modify existing commercial practice, existing government acquisition policy or law, while application of other aspects of the commercial system will require changes to the system, to policy, or to law.

### 5.1 The Commercial Environment.

The commercial acquisition system used by the airlines has evolved over the past decade. The commercial airline market is highly competitive, and training system support costs are spread over the number of seat miles flown by the operator. Many factors influence commercial trainer costs, but this report focuses on those factors applicable to the military acquisition environment which make a significant impact, and which can result in the elimination of high cost or risk.

When a carrier orders a new aircraft, particularly a development program such as the Boeing 777, the carrier must provide training for flight crews and maintenance personnel in a timely manner that results in the aircraft being received and put into service without delay driven costs. Interest cost on grounded equipment, replacement crew training on older equipment, substitution of equipment required to maintain schedules, and idle crews are factors which drive startup costs beyond what is reasonable by any measure.

Carriers must have trained people available at the right point in time. Accordingly, they procure training equipment in ways such as to minimize risk of the above cost drivers, consistent with availability of platform data and the delivery schedules of competent providers. Carriers rely on qualified vendors whose very existence is based on a proven track record of performance. Neither the carrier or the vendor can cut corners on quality because of performance based requirements levied and evaluated by third parties (the FAA). Carriers meet in industry forums, (ATA, IATA, Aircraft User Symposiums), and the vendor who has delayed the introduction of a new fleet will be made known to all. Therefore, key practices and core competencies described in Section 6.0 of this appendix are rigidly implemented in the application of Commercial Practices which reduce cost and time required to solve the much more complex issues discussed above. The success or failure of the entire program is dependent on ALL players being responsible and qualified. Promises of future achievement are not weighed as heavily as past performance. Costs associated with a one day delay can easily be more costly than the entire cost of the training device. Therefore, proper priorities must be established in the procurement phase, and core competencies of qualified suppliers must rise to the top of the source selection criteria.

A supplier who can maintain a training device may not be qualified to build one, a courseware developer probably cannot maintain a device and a device manufacturer may not build subsystems. The commercial market place establishes roles and opportunities for all vendors, large and small, to provide the products and services that each does best, following the rules that *performance* will weed out those that cannot meet the challenge, without the risks and costs to the buyer, whether it be commercial or governmental.

### 5.2 The Commercial Infrastructure.

Commercial acquisitions are supported by five key documents. They are:

Standard Device Definitions: FAA Circular 120-40B defines airplane simulator qualifications and performance criteria for simulators used in support of airline training programs. This document defines the *functional performance requirements and device characteristics* required for various levels of flight training and pilot certification. It serves the industry as a top level performance specification.... a *pre-coordinated* specification which is known to all buyers and sellers alike. When a buyer solicits a bid from a vendor for a "Level D simulator for a B-777 tail number xyz", there should be no question on either side regarding device capabilities, functional characteristics, intended use, or application. Air Force Pamphlet 36-2211 extends the FAA concept of standard device definitions to address devices supporting training for military transport aircraft.

Standard Format for Prime Item Development Specifications: Training device manufacturers, working through their trade associations and the IATA, have standardized the format for prime item development specifications, the specifications provided as part of a vendor's bid or proposal. The prescribed spec format is very comprehensive, addressing details of functional performance, design, and construction. Vendor specifications typically reference a large number of both government and non-government specifications and standards. When a buyer solicits more than one vendor for bids, he can expect to receive development specifications in a common format which line up with each other, section by section.

### 5.2.1 Platform Data.

Current, timely air platform design and performance data is required to support development of training devices and systems. Airline buyers recognize this, and require airframers to provide platform data as an integral part of any aircraft sale. IATA/ICAO has established a standard data requirements set, which is far more robust than that developed for most military trainer acquisitions. As a part of an aircraft sale, airframers normally make the platform data available to training device developers at a nominal cost. Data is provided ahead of air platform deployment to support timely trainer development. Airframers also maintain the data packages for the life cycle of the airframe, issuing change notices to data holders (in the training industry) as platform changes occur.

### 5.2.2 CLS Support Package.

Training Device and System developers normally provide a contract logistics support package to airlines purchasing their equipment. The CLS package normally includes virtually all the design and fabrication drawings developed for the trainer, all commercial manuals associated with sub-systems, operator manuals, and comprehensive software documentation. Data is provided on a *limited rights* basis; airlines are free to use the data to maintain or modify the training devices, but are prohibited from using the data to fabricate new devices or systems.

### 5.2.3 Acceptance Test Procedures/Device Qualification.

Commercial aircraft training device test and qualification requirements are pre-defined by the FAA in Circular 120-40B. Both the buyer and the seller know well in advance of the sale exactly what the FAA requires for device test and qualification to any given functional performance level. Both also know what periodic (annual, semi-annual) tests and qualification will be required throughout the life cycle of the trainer. All tests are cut and dried. Sellers understand that they have to please both the FAA inspectors and the buyer in qualifying the device. Buyers accept the FAA qualification as necessary and sufficient.

## 5.3 Comparison: The NGS-IPT Framework with Existing Commercial Practice.

Panel members believe most elements of existing commercial practice are compatible, if not complimentary, of the standard NGS-IPT acquisition framework. Government members recommend a "toggle" be placed within the acquisition framework which enables the Services to switch to commercial practice where practical and to the extent supported by law. Table M-I compares characteristics and limitations of each system.

**Table M-I. Comparison of Full Commercial to NGS-IPT Business Practices.**

**Commercial Characteristics:**

- Supports rapid contract award
- Requires minimal buyer oversight
- Little schedule risk
- System completely performance based
- System leverages airline industry investment
- System benefits from FAA/Industry process maintenance
- System strongly supports device acquisitions
- Requires minimum buyer resources

**NGS-IPT Characteristics:**

- Deals with ALL bidders
- Modulates oversight with perceived risk
- Supports all training sector

**Commercial System Limitations:**

- Not suited to programs with
  - Floating functional requirements
  - High risk development
- Does not incorporate ALL key processes
  - Therefore not applicable to buys requiring specialized processes
- Optimized for aeronautical training sector only - may not be suited for other training sector buys

**NGS-IPT Limitations:**

- Full Source Selection required
- Significant overhead costs
- Longer delivery schedules - allow for increased oversight and approval cycles.

## 6.0 KEY BUSINESS PRACTICES FOR THE TRAINING SYSTEMS INDUSTRY.

This section summarizes the key business practices and core competencies common to the training industry segment. It includes a description of each key practices, its performance attributes, and the criteria by which one could judge successful implementation.

These key practices are offered *in addition* to the core processes identified by the NGS-IPT at large. The processes below are built upon the core processes, to include program and data management, systems engineering; advanced quality systems, manufacturing, procurement/ subcontract management; logistics support/sustainment and others described by the NGS-IPT Key Process document. Suppliers are expected to have many core processes, which are aggregated to form the key training systems processes shown below.

The training systems and devices (TSD) unique elements of the Systems Engineering practice are training system development and integration; training requirements analysis; simulation devices; environmental simulation; courseware; and contractor logistics support (CLS). The TSD unique development is defined to encompass all phases of the training system characterization in support of a weapon system acquisition program. The basic core specific enabling practices including performance, functional and interface requirements of the program, are specified by technical and training requirements documents in support of the required operating environments. These core

enabling practices for hardware, software and courseware are a part of the primary components needed to train an individual, team, or organizational element and are appropriate for both training systems and devices in virtual or constructive training programs.

The following practices emphasize and provide a disciplined approach to engineering design, analysis, verification, production, and life cycle management of training systems and devices.

### 6.1 Key Practice #1: Training System Development and Integration.

Description: This practice provides the ultimate user with the analysis of training requirements, training methodology, materials, resources, equipment and their integration to consistently produce qualified personnel to meet the requirements of the weapon platform roles and missions. The training system is composed of an integrated combination of all necessary curriculum materials, related instructional elements, facilities, equipment, management, students, instructors and sustaining support required to conduct training for the specified training objectives. Interactive courseware (ICW), part task trainers (PTT) and full task trainers (FTT) are usually included as part of the overall training system.

Attributes:

- experience in managing subcontractors, teammates and internal disciplines required to ensure the timely and concurrent delivery of the weapon platform training system with the actual user required training capability
- the ability to analyze a Training System Requirements Analysis (TSRA), design, and build the curriculum, simulation components, and training and evaluation methods
- manage the training system development interface which includes: courseware, full and part task trainers, instructors, students, and interfaces with the weapon system being simulated in a dynamic environment (including in-flight training or in support of in-flight training)
- the ability to obtain needed data early in the program, obtain concurrency with the weapon system being simulated and provide for life maintenance and update
- the ability to apply software technology and interfaces for sub-systems being implemented

Criteria:

- degree of currency of training system with weapon system
- degree to which weapon system training requirement has been fully characterized by the training system used by the student
- timely production of students fully meeting weapon system performance goals

### 6.2 Key Practice #2: Training System Requirements Analysis.

Description: TSRA is the process used to determine what instruction/training is needed. Training task performance requirements are analyzed and a training task listing developed. Simply put, the difference between what incoming students know, and what the task requires, determines what training is necessary. In a broader sense, TSRA further defines the training system concept and the total training system configuration so that all training system functions are defined.

Attributes:

- the ability to provide an acceptable training requirements definition process
- the ability to provide derived training requirements
- the ability to provide an accurate definition of expected training resource requirements

Criteria:

- Training system functions are defined for the particular task application. Passing grade is obtained on a system requirement review (SRR).

### 6.3 Key Practice #3: Courseware Development.

Description: Courseware is defined as all training materials such as technical data, textual, audio/visual instructional, and computer based instructional materials that are used to train a particular task. Courseware is developed to meet the instructional goals outlined during the TSRA process. The development process includes the incremental writing, coding, and programming of each lesson in conjunction with reviews and tryouts to confirm that requirements are being met.

Attributes:

- the ability to achieve the objective or instructional completeness for which it was designed in a way that optimizes training effectiveness and efficiency
- the ability to complement successfully the total training system concept and be integrated into the full training system

Criteria:

- Data collection activity is needed to determine a metric set. Data includes:

  Number/priority of technical discrepancies

  Timelines of response

  Number of Changes

  Cost

  Student/Instructor feedback on training effectiveness is an important qualitative metric.

## 6.4 Key Practice #4: CLS Competencies.

General Description: This effort consists of Training Systems Sustainment throughout their "life cycle". While internal/organic DOD sustainment is still a factor and will be utilized, the thrust of this document is "Contracted Logistics Support (CLS)" or Contractor Operation and Maintenance of Simulations (COMS). The key sub-practices within this key practice area are:

a) Training Systems Support Center (TSSC) operations,

b) Student Through-put/Training management Systems (TMS)/Instruction,

c) Maintenance, and

d) Modifications.

**Sub-Practice: Systems Operations (TSSC Operations).**

Description: Training Systems Support Center (TSSC) operations involve managing the single-site stand-alone hardware and software resources utilized to develop/test training "mission" changes and configuration system software changes. New software loads are subsequently run on the actual training system and if successful, exported to related training sites. The TSSC is a prime repository and configuration control point for all manuals, engineering drawings, software media, and data utilized by the systems.

Attributes:

- the ability to accomplish missionization changes
- the ability to accomplish configuration controlled changes
- the ability to validate software changes on an installed system

Criteria:

- timely and effective completion of TSSC assigned tasks

**Sub-Practice: Training Delivery; Student Through-Put/TMS/Instruction.**

Description: Student Through-Put deals with all aspects of training as a crew member moves through the training curriculum. Training Management System (TMS) expertise deals with any of several computerized student tacking systems covering such aspects as schedules, grades, retesting, competencies, etc. Instruction deals with the effective use of devices, courseware, and classroom time to effectively train students. Instructors are used to operate, monitor, provide feedback, and insert faults and threats during training missions.

Attributes:

- the ability to utilize effectively and maintain a TMS in scheduling, grading and re-testing students
- the ability to acquire and/or provide appropriately skilled personnel
- the ability to recommend alternative training solutions

Criteria:

- the successful first pass completion of proficiency or check ride testing

**Sub-Practice: Maintenance.**

Description: All aspects of organizational, Intermediate, and Depot level maintenance of Training Systems. Can be accomplished by on-call, on-site, or in-plant or by a mix of contractor resources. Responsible for other functions formerly performed by organic DOD Service personnel such as:

a) Run I/O station and replicate tower, FAC, and other A/C,

b) Perform security/custodial functions,

c) Accomplish janitorial functions for facilities.

Attributes:

- the ability to preserve all aspects of design integrity throughout the system operational life
- the ability to initialize/operate all aspects of the training system
- the ability to replicate all control tower responses/calls to students
- Acquire/provide the appropriately skilled personnel;
- Conduct training of these personnel; and
- Perform the required tasks; i.e., maintenance, modification, configuration management, operation, and training of simulators /training systems.

Criteria: Performance is measured utilizing the following metrics:

- Ability to maintain a Contractor Performance Factor (CPF) or "system availability rating of" 95%. CPF is based on an equation involving operational ready time (ORT), non-chargeable downtime (NCD), and chargeable downtime (CD);
- Completion of Preventative Maintenance (PM) tasks;
- Quality of completed maintenance; and
- Cleanliness of assigned equipment and areas.

**Subpractice: Modifications.**

Descriptions: Training Systems Modifications are significantly of two types:

a) Weapon Systems Compatibility modifications, and

b) Training Systems unique modifications affecting such things as Visual Systems, Motion bases, and data bases.

The modification contractor must be able to simulate weapon changes with a combination of software and hardware, stimulate actual weapon equipment to gain the desired results, or change courseware or Instructional materials as approved by the respective Service.

Attributes:

- the ability to simulate weapon system changes through a combination of software and hardware changes to the training system
- the ability to utilize actual weapon system components and stimulate them to acquire the intended results
- the ability to track weapon changes and propose a corresponding training system change

Criteria:

- concurrent delivery of platform configuration changes
- the successful completion of any required ATP/fidelity checks

### 6.5 Key Practice #5: Environmental Simulation.

Description: The environmental simulation process develops the subsystems which provide for the artificial simulation environment. A supplier would develop the attributes and components necessary to satisfy the system requirements for elements such as:

1) Visual Out The Window (OTW). Forward Looking Infra-Red (FLIR) and other optical sensor systems

2) Electromagnetic sensors, including Radar and Electronic Warfare

3) Acoustic sensor systems

4) Data Bases to support the operation of provided sensors and all other supporting environmental information (e.g., atmosphere)

5) Network Interoperability for integrated simulation operations using prescribed interface protocols.

The attributes and components necessary to complete these systems development activities should be adequate and sufficient to meet the needs of the TRA and the performance specification. These systems and supporting data development activities may be completed with a combination of developed and off the shelf products which are in place to meet the requirements. These components are integrated into the total simulation environment by the integration under the Simulation Device practice.

**Attribute #1.**

**Developed product line, or ability to develop a product line for associated components for each system.**

Criteria:

- The "Catalog" product(s) are available and "compliant".
- A viable technology and product growth plan

- Developed systems are flexible enough to adapt to system requirements.
- Architecture is robust and extensible with future growth potential.

**Attribute #2.**

**Capability to manipulate various source data and build it into operationally useful formats and data sets.**

Criteria:

- Manages and manipulates data with various input and output formats to the level of fidelity, functionality and completeness required

**Attribute #3.**

**Ability to develop software and hardware architectures and systems interfaces which allow for interaction with the external simulation environment.**

Criteria:

- Demonstrates interaction of dissimilar systems to effect the operation of each other.
- Capability to develop and produce systems which allow for proper interfacing and Interoperability.
- Demonstrate understanding of protocols, interface technology and implementation in a distributed environment.

### 6.6 Key Practice #6: Simulation Devices

Description: Simulation devices are defined as:

- The trainee station,
- simulation software and computer/interface system,
- instructor/operator station and supporting instruction,
- operation and maintenance subsystems, and
- components combined to train tasks allocated to specified devices.

The simulation device may be a full task or part task trainer for weapons system operator or maintainer training. Simulation device development applies the six key processes to achieve the static and dynamic fidelity level of simulation needed to support the required training capability. In addition to simulating required systems/subsystems of the weapon platform, other friendly and hostile threat platforms and their interaction may be simulated and interfaced with other environment simulation systems, including Distributed Interactive Simulation (DIS) using predetermined protocol standards.

Attributes:

The ability of the simulation device to achieve the training requirements for which it was designed in a way that optimizes training effectiveness and efficiency

Criteria:

- the successful first pass completion, by all students trained or tested, of at least 95%

# 7.0 FINDINGS AND RECOMMENDATIONS.

The following are the key findings and recommendations were made sole by the government members of the Training Systems and Devices Panel with input from the industry panel members.

## 7.1 The NGS-IPT Recommended Acquisition Framework.

### 7.1.1 Finding.

Acquisition concepts developed by the Government members of the NGS-IPT strongly support training industry segment implementation of commercial practices. Concepts of F3I, vendor ratings, and flexible sustainment have been practiced within the commercial training industry for almost 20 years, and performance based requirements and contract logistics support have been the norm for military procurements for almost a decade. NGS-IPT mechanisms associated with Key Supplier Processes, Risk Based Oversight, and Source Selection are all consistent with the training systems industry segment desire to adopt commercial acquisition practices.

### 7.1.2 Government Members' Recommendation.

Government members of the panel recommend that constituent industry members support the NGS-IPT recommendations. They further recommend that the Service acquisition arms for training (USAF Training System Product Group, Army STRICOM, Navy NAWC-TSD and PMA-205) adopt the NGS-IPT practices immediately for new business, and employ the block change process (either by plant, or by product line) to rebaseline existing contracts where practical.

## 7.2 Commercial Practices

### 7.2.1 Finding.

Individual members of the panel observed that industry has a well established, robust, performance based commercial practice which can be used to reduce the cost and schedule of similar military training acquisitions. Panel members believe this commercial model can be expanded to meet many military unique requirements without losing its benefits and it can be implemented immediately for some systems.

### 7.2.2 Government Members' Recommendation.

The government members recommend use of commercial practices where applicable, and extension of supporting commercial documentation to military applications. They also recommend the Services execute a pilot program to prove use of commercial practices for military acquisitions.

## 7.3 Competition in Contracting Act (CICA)

### 7.3.1 Finding.

Panel members observed that use of best commercial practice and the Competition in Contracting Act (CICA) are inconsistent. Military contracts experience a wide variance of product quality and contractor performance as a result of novice entrants supported by CICA. Appropriately structured vendor qualification, if supported in law, would eliminate frivolous submittals by non-qualified suppliers, reduce proposal costs included in overheads passed on the government on other contracts, and reduce the amount of manpower required by the government for formal source selection, while maintaining qualified competition. House bill HR 1670 supported some changes in CICA to allow for verification of vendor qualification and past performance in a pre-source selection evaluation.

### 7.3.2 Government Members' Recommendation.

Passage of House Bill 1670 is still pending as of the publication of this report. At such time as this bill is enacted into law, Government panel members recommend formation of a joint Government/ Industry team to define vendor qualification procedures based on the final language adopted by Congress.

## 7.4 Weapon System Design and Performance Data

### 7.4.1 Finding.

Panel members found that the timely availability of weapon system design and performance data is crucial to training system development. Most military training system contracts suffer late deliveries and performance deficiencies due to lack of required data. Military trainer configurations are not kept current with changes to the weapon platform due to late delivery of platform data. Life cycled aircraft performance and design data delivery to trainer developers and maintainers is a mandatory, inherent element of commercial practice.

### 7.4.2 Government Members' Recommendation.

Government members of the panel recommend that priority be given to timely procurement of weapon system platform data, concurrent with platform development.

### 7.5 Use of Ada for Software Development

#### 7.5.1 Finding.

Panel members observed that commercial trainer development practice is based on use of commercial software languages and development environments (typically C++ in an object oriented environment). Panel members believe commercial development environments have now surpassed those available to Ada programmers in terms of efficiency and utility (i.e., it is now easier to achieve Ada goals and objectives using commercial software development environments, than if using environments offered by Ada providers.) Members opined that since military training devices and systems are maintained under contract logistics support, developers should be accorded the latitude to select the software language and development environment offering the best life cycle cost benefit.

#### 7.5.2 Government Members' Recommendation.

Government panel members recommend revision of policy as necessary to allow optional use of commercial software development standards.

## 8.0 APPLICATION OF NGS-IPT CONCEPTS.

The NGS-IPT framework and flow of activities is shown below, tailored to development of training systems or devices. The "top" flow line reflects NGS-IPT concepts applied to acquisition of a weapon system; the flow below it shows acquisition of the training system or device, and the lines connecting each are the "hooks" between the two acquisition processes, where flow of data or information is required.

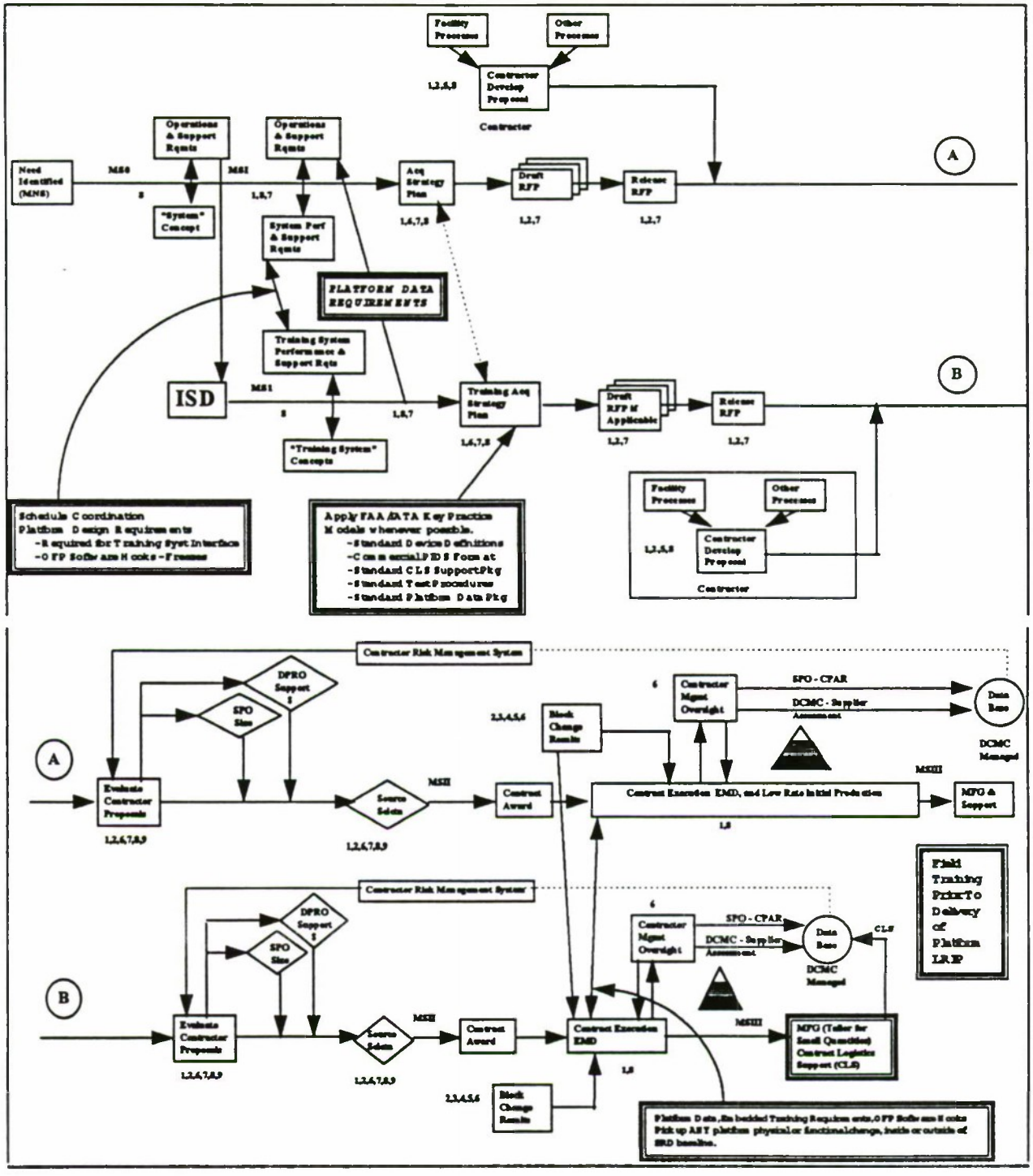



**Figure M-1. NGS-IPT Framework and Flow of Activities.**

*TRAINING SYSTEMS*

# *TECHNOLOGY ROADMAP*

**SPONSORED BY**

***THE JOINT TECHNICAL COORDINATING GROUP***
***FOR***
***TRAINING SYSTEMS AND DEVICES***

# *Overview*



- JTCG-TSD
- Background
- Roadmap purpose
- Technology management
- Current Product

## JLC

Joint Logistics Commanders



- o " . . identify opportunities for joint programs .."
- o " . . suggest establishment of standards and common architectures .."
- o " . . Maintain cognizance of all activities .. which involve R D & A . ."
- o " . . will ensure coordination and exchange of information . ."

## JTCG-TSD

MARCORSYSCOM

NAWC-TSD

PMA-205

STRICOM

TSPG

# Background



- **STARTED - Air Force Process**
  - Linkage of training vision with technology requirements
  - Presented at previous I/ITSEC and industry conference
- **MANY STAKEHOLDERS & SUPPORTERS**
  - USAF Training System Product Group (TSPG), Labs, MAJCOMS, TPIPTs
  - NAWC-TSD
  - STRICOM
  - PMA-205
  - MARCORSYSCOM
  - JAST

# Purpose

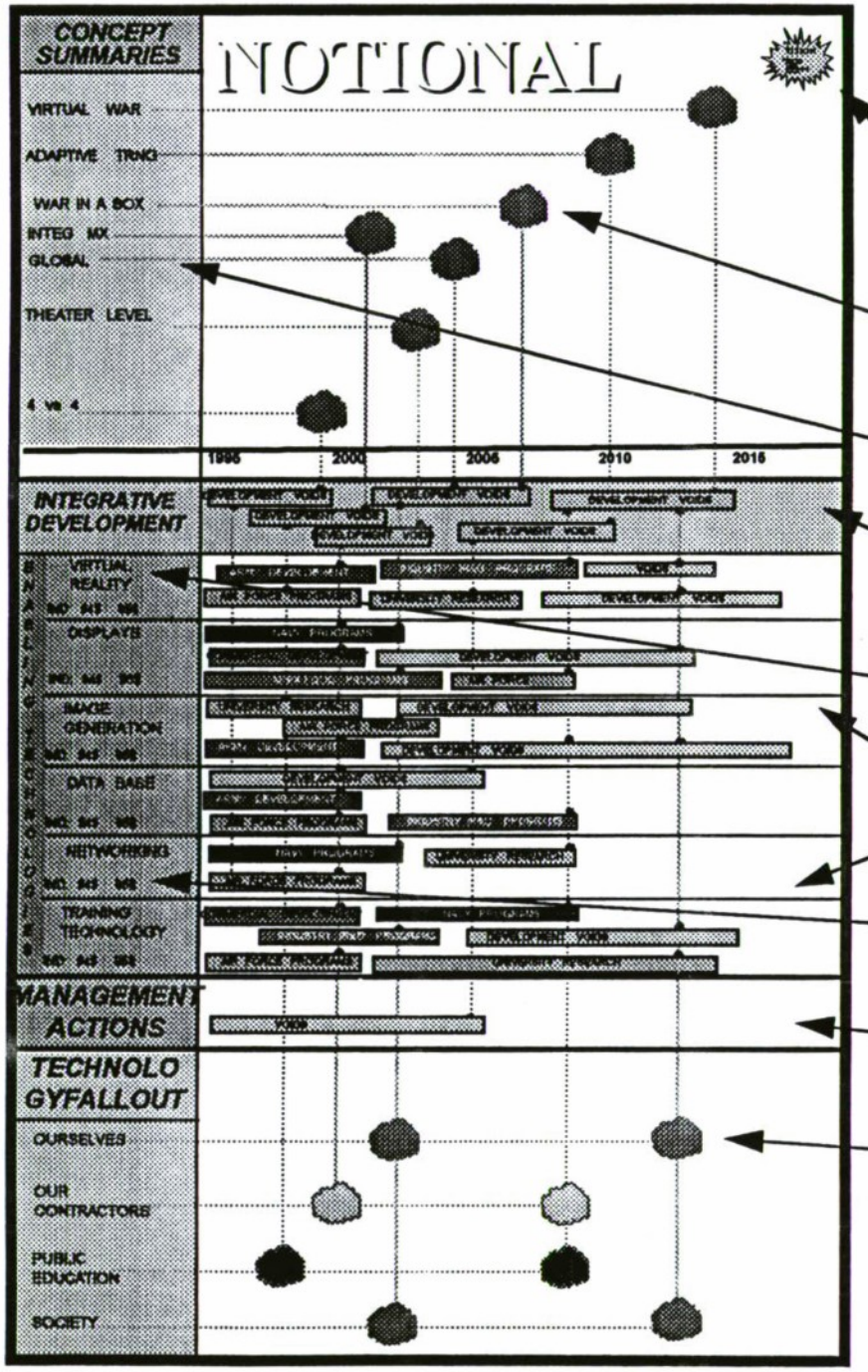


- Support All Stakeholders
- Communicate Vision of Future Training
- Guide Technology Investment
- Support Program Definition
- Support Development Planning Processes

- Stimulate Discussion and Communication

INDUSTRY | SERVICES R&D | LABS | ACADEMIA

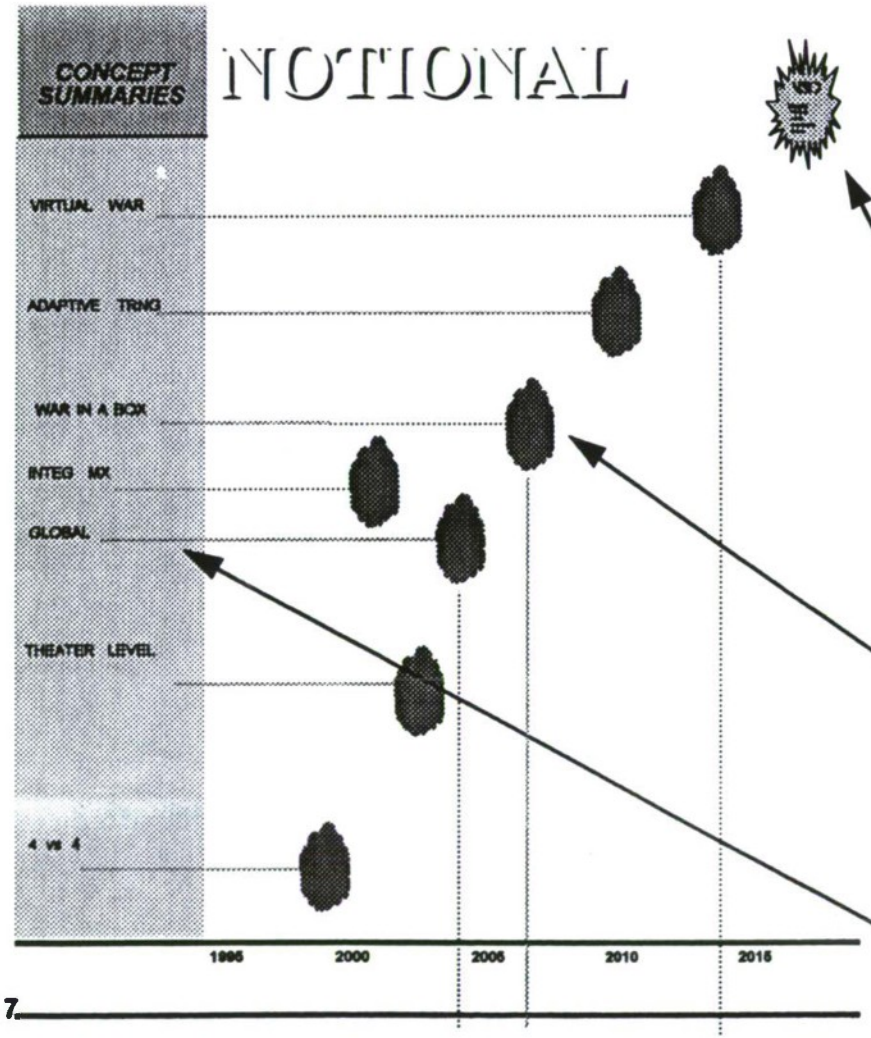
# ROADMAP
# SNAPSHOT CHART




- VISION
- EVOLUTIONARY STEPS
- CONCEPT SUMMARIES
- INTEGRATIVE DEVELOPMENTS
- ENABLING TECHNOLOGIES
- DEVELOPMENT PROGRAMS
- INDUSTRY INVESTMENT
- MANAGEMENT ACTIONS
- TECHNOLOGY FALLOUT



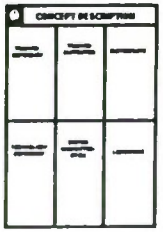
*CHART SHOWS PROCESS STATUS.....*
*.....ONLY AT ONE POINT IN TIME*




# *ROADMAP*
# *SNAPSHOT CHART*

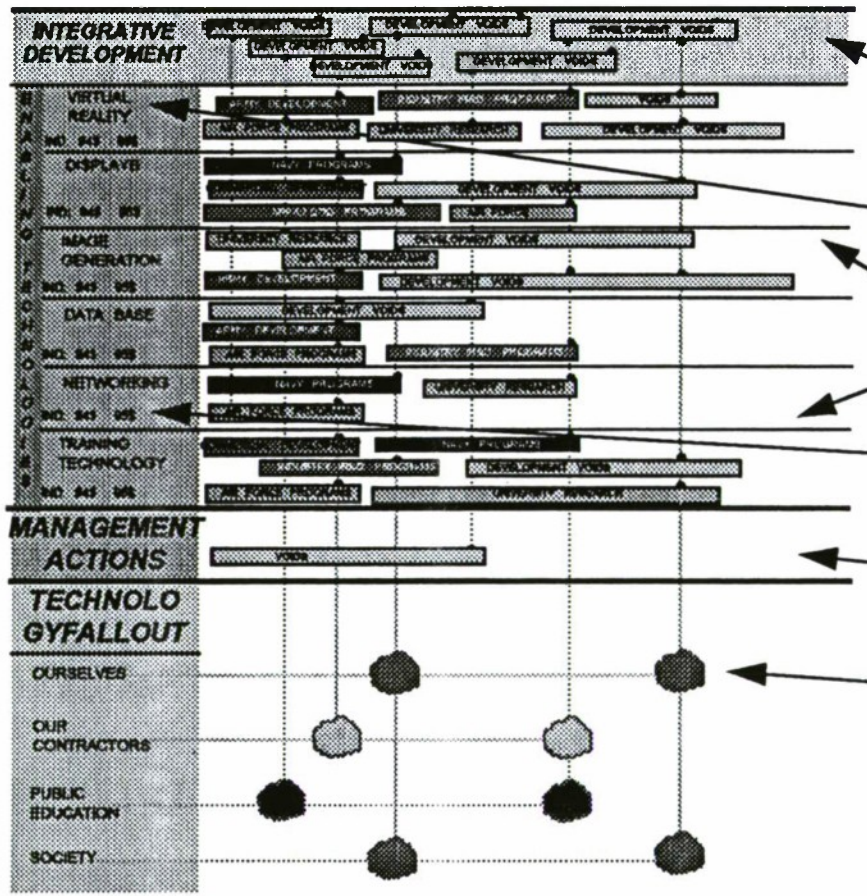
**VISION**

**EVOLUTIONARY STEPS**



**CONCEPT SUMMARIES**

# JOINT TECHNICAL COORDINATING GROUP - TRAINING SYSTEMS AND DEVICES




- INTEGRATIVE DEVELOPMENTS
- ENABLING TECHNOLOGIES
- DEVELOPMENT PROGRAMS
- INDUSTRY INVESTMENT
- MANAGEMENT ACTIONS
- TECHNOLOGY FALLOUT

# *Technology Management Sponsorship*



- **All Service Training Visions and Concepts**
  - **Existing "Future Concept Clouds" represent all services**
- **Continues to show applicable development activities**
- **Chart becomes one element of a Joint technology management process**
- **Activity sponsored by JTCG-TSD**

# *Technology Management Process Elements*



- **Joint Technologist Working Groups**
  - By Enabling Technology
  - Validate development programs on roadmap chart
  - Define technology voids
  - Includes Government technology experts
- **Annual Government / Industry R&D Conference**
  - Government Presentations To Industry - Visions and Voids
  - Industry Presentations to Government - Proprietary
- **Updated Roadmap**
  - Project Descriptions
  - Void Descriptions

# *Technology Management Process Elements*

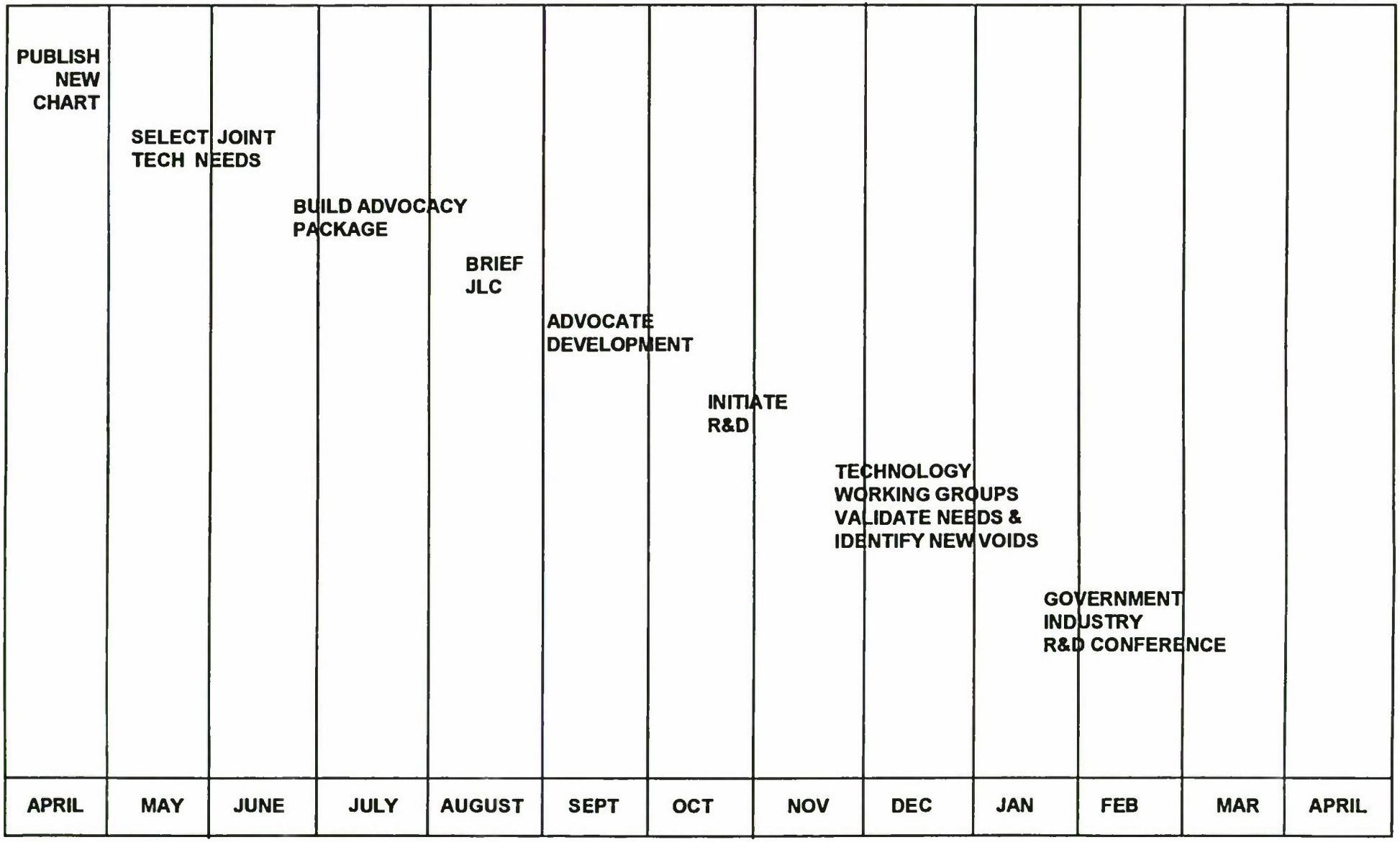


- **Select Most Important Joint Technology Needs**
  - Charter Sub-Groups to Define Specific R&D Requirements
  - Build Advocacy Package
- **Brief to JLC**
  - Secure Endorsement
- **Advocate to Likely Sponsors**
  - MAJCOMS, ARPA, DMSO, INDUSTRY
  - Secure Funding
- **Execute Programs as Approved**
  - Assign each approved program to one Service as Executive Agent

# Annual Schedule

**JOINT TECHNICAL COORDINATING GROUP - TRAINING SYSTEMS AND DEVICES**

**Training Systems Technology Roadmap**



# Current Products



- **Available Today**
  - New Multi-Service Roadmap Snapshot Chart
  - Project Descriptions Pamphlet
  - Comment Forms
  - Project Recommendation Forms

- **Also Available on Web**
  - At http:\\tspg.wpafb.af.mil
  - Project Forms
  - Comment Forms

# Summary



- JTCG-TSD has adopted an active, joint technology management process
- Industry Invited as active partner
- We encourage you to:
  - Participate in this Joint R&D Management Process
    - » Government "Technology Voids" briefing in open forum
    - » Industry IR&D briefings to Mulit-Service Representatives Only
  - Consider the roadmap in planning your technology investment

# Points of Contact



| | Telephone No/cc mail |
|---|---|
| • ARMY | |
| – Ed Trier STRICOM | (407)-384-3800/triere@stricom.army.mil |
| • Air Force | |
| – Bill Curtice TSPG | (513)-255-4591/curticwl@asc.yw.wpafb.af.mil x235 |
| – Liz Martin Armstrong Lab | (602)-988-6561/martin@alhra.af.mil |
| • Navy | |
| – Bill Harris NAWC-TSD | (407)-380-8376/bill_harris@ntsc.navy.mil |
| – Cmdr Dixie Mays PMA-205 | (703)-604-2245/maysdj.jfk@navair.navy.mil x3005 |
| • Marines | |
| – Joe Santilli MARCORSYSCOM | (407)-380-4234/joe_santilli@ntsc.navy.mil |

# ADVANCED PLANNING BRIEFING TO INDUSTRY




**CAPT MARK YERKES**
**Commanding Officer**

**(407) 380-8328**
**mark.yerkes@ntsc.navy.mil**
**http://www.ntsc.navy.mil**

CB0001A



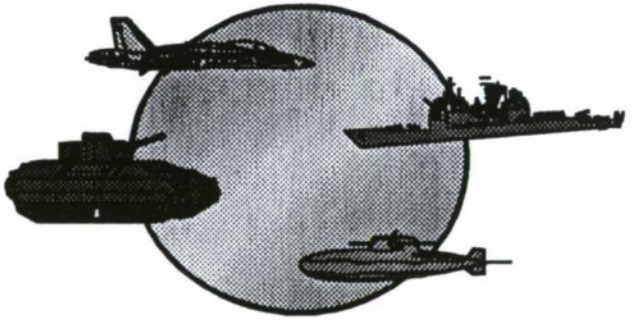

# WHY ARE WE HERE?




$$R = f ( E +/* T )$$

# NAWCTSD

- To be the principal Navy center for research, development, test and evaluation, acquisition and product support of training systems
- To provide interservice coordination and training systems support for the Army and Air Force
- Other functions and tasks as directed:
  - DoD VETT
  - TIDES
  - AIM SSO



  - Navy DIS Agent
  - NAVAIR/NAWC M&S Lead

**The world class leader in training, simulation and modeling systems, and provider of choice for quality products and services to our customers' total satisfaction.**

CB0002B

# NAWCTSD HISTORY

| | |
|---|---|
| 1941 | Established as Special Devices Desk-Bureau of Aeronautics |
| 1946 | Moved to Port Washington, N.Y. |
| 1950 | Army Memorandum Of Agreement signed |
| 1965 | Moved to Orlando |
| 1970 | Marine Corps representation established |
| 1975 | Air Force representation established |
| 1985 | State of Florida Center of Excellence established |
| 1988 | Relocated to Central Florida Research Park |
| 1993 | Naval Air Warfare Center Training Systems Division |

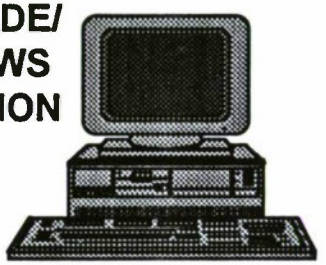

NAWC
Training Systems Division
NAVAL AIR WARFARE CENTER
Security
Parking

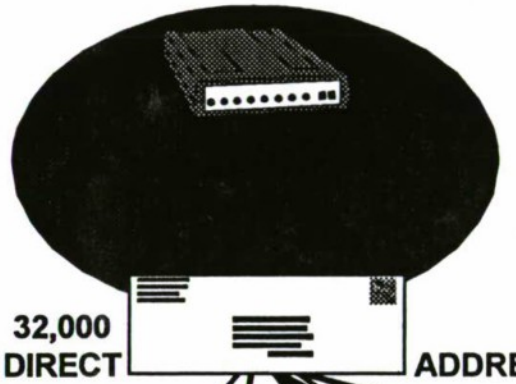
CBBW0005B

# AUTOMATION/ COMMUNICATIONS

NAVAL AVIATION SYSTEMS TEAM

PC UPGRADE/ WINDOWS MIGRATION





ALTAIRS



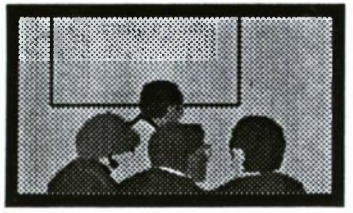


REMOTE PCs 1-800 #



ATOS

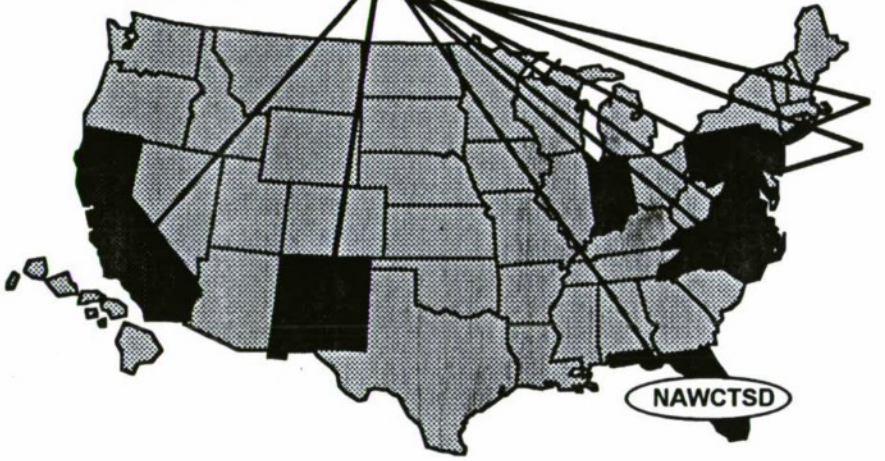
2 VTCs INSTALLED



32,000 DIRECT ADDRESSES

JAMS






CCTV



VOICE MAIL



CORPORATE METRICS



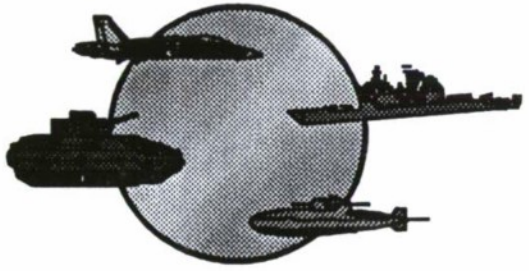
PINs ASSIGNED

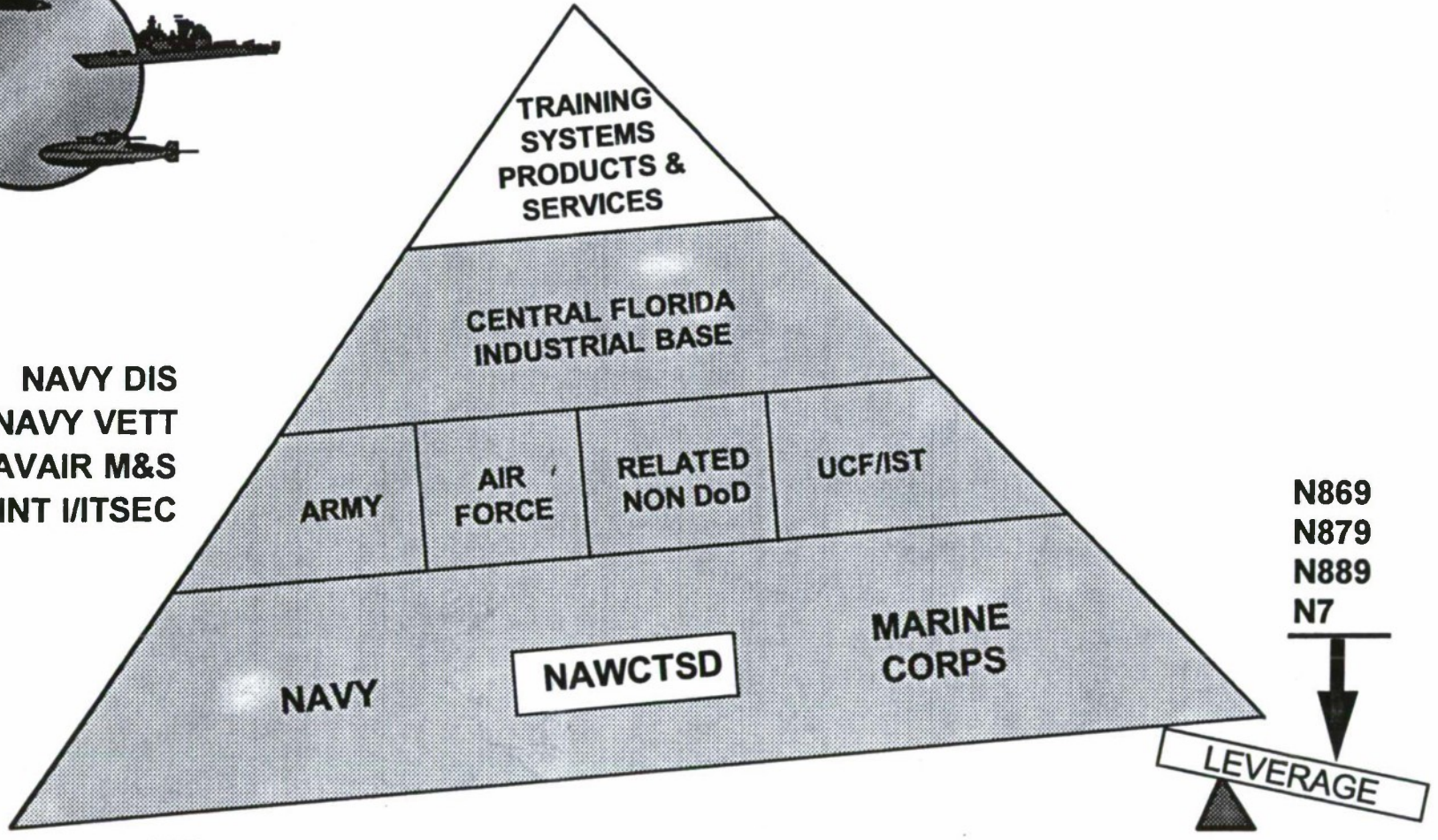


CB0010C

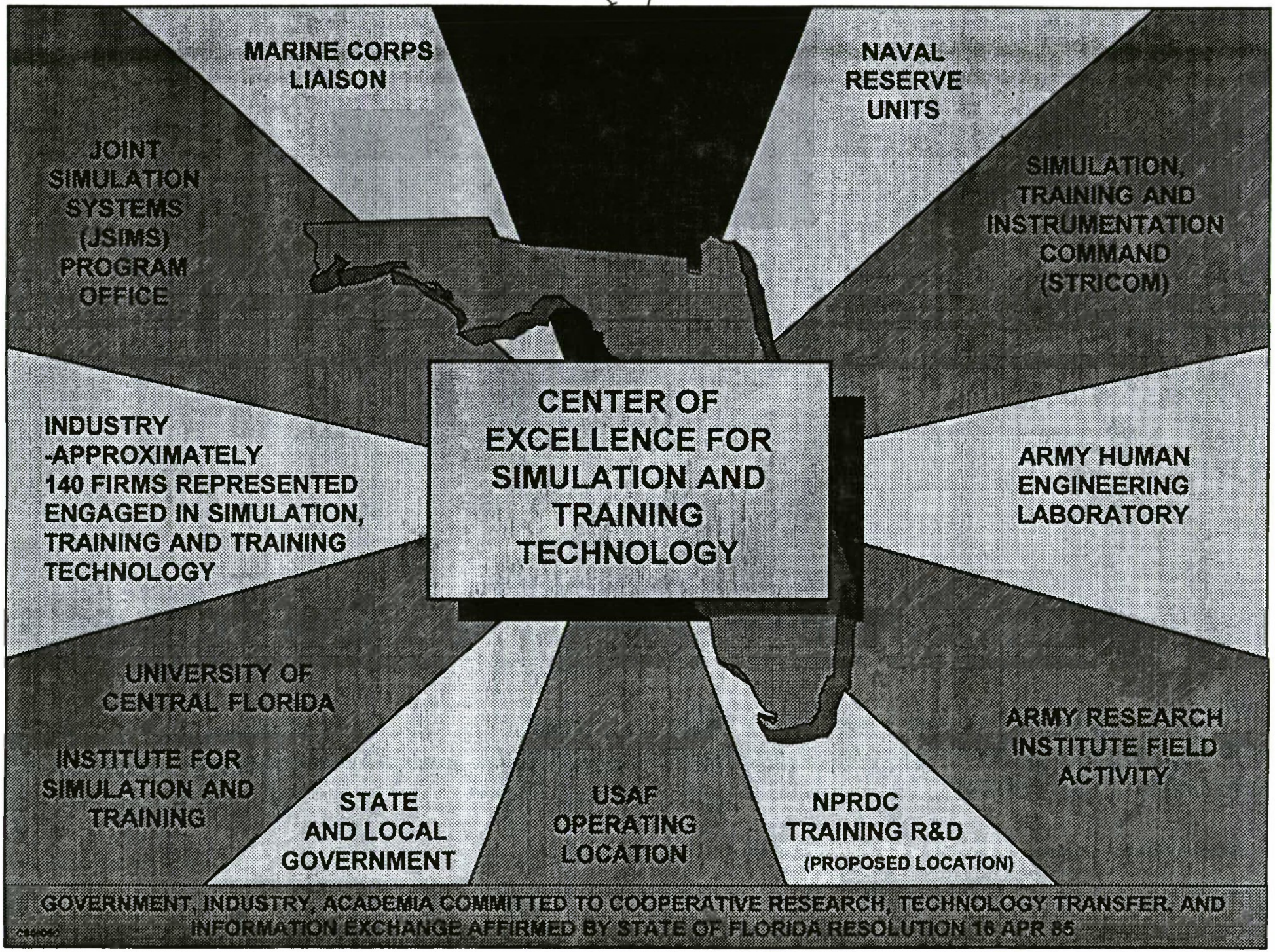
# NAWCTSD

## LEVERAGING THE CENTER OF EXCELLENCE

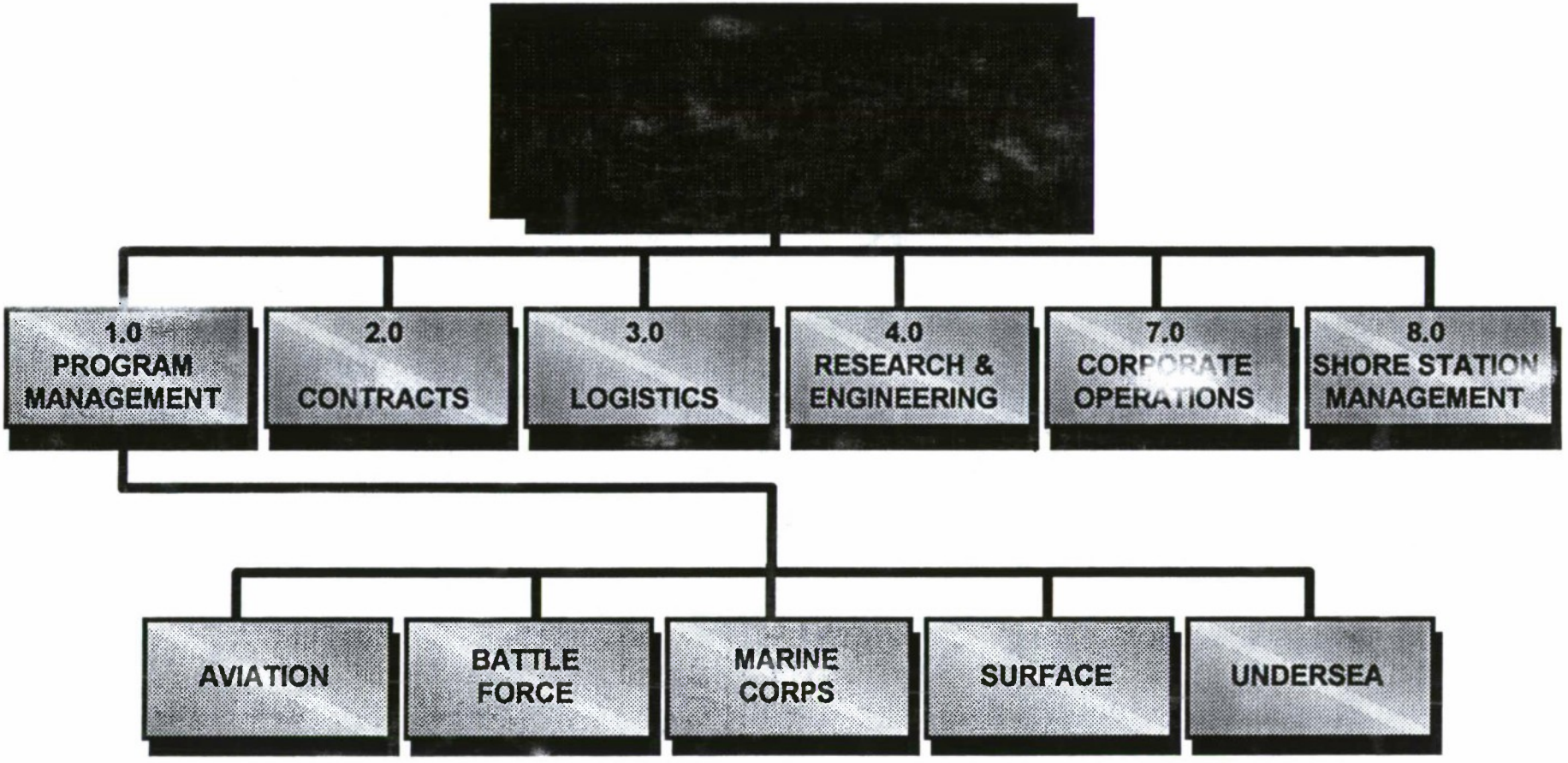




NAWC Trng Systems Div



# NAWCTSD

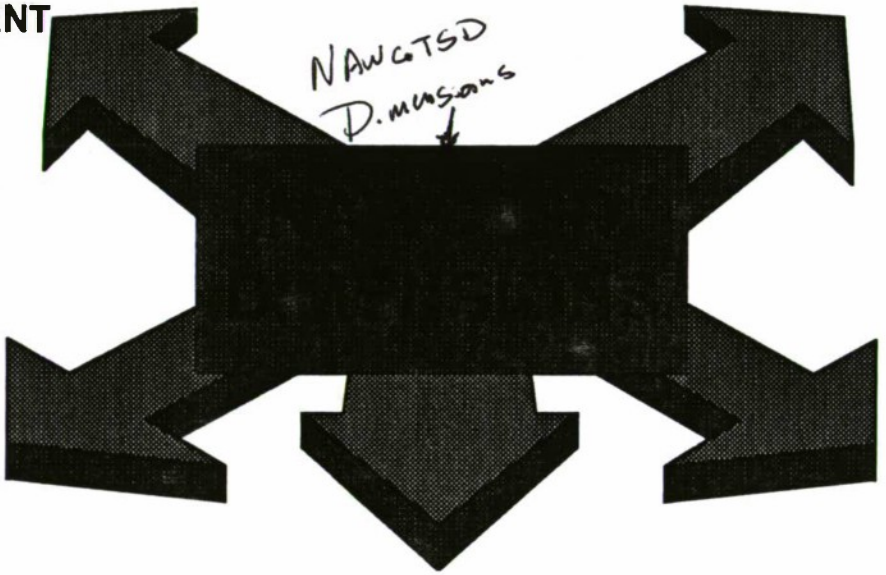

1.0
PROGRAM
MANAGEMENT
2.0
CONTRACTS
3.0
LOGISTICS
4.0
RESEARCH &
ENGINEERING
7.0
CORPORATE
OPERATIONS
8.0
SHORE STATION
MANAGEMENT
AVIATION
BATTLE
FORCE
MARINE
CORPS
SURFACE
UNDERSEA

[redacted]

FRONT-END ANALYSIS
RESEARCH & DEVELOPMENT
ENGINEERING
LOGISTICS
PROJECT MANAGEMENT
FINANCIAL MANAGEMENT
CONTRACTING
FIELD SUPPORT

[redacted]

AVIATION
SURFACE
UNDERSEA
MARINE CORPS
BATTLEFORCE/C41/SEW




[redacted]

FORMAL EDUCATION
32 PHD, 221 MAST, 463 BACH

ENGINEERS
COMPUTER SCIENTISTS
INSTRUCTIONAL SYSTEMS
ECONOMISTS
PROGRAM MANAGERS
CONTRACTING OFFICIALS
OPERATIONAL MILITARY
LOGISTICIANS
PHYSIOLOGISTS
PSYCHOLOGISTS
ATTORNEYS

[redacted]

USN
USMC
AIR FORCE
ARMY
COAST GUARD
FMS

DMSO
OSD
ARPA
NSA
NASA
FAA

[redacted]

DIS
ARTIFICIAL INTELLIGENCE
ICW
EMBEDDED SIMULATIONS
HELMET MOUNTED DISPL
VOICE RECOGNITION
VIRTUAL ENVIRONMENT
DISTANCE LEARNING
REUSABLE SOFTWARE

# THE ACQUISITION PROCESS AT NAWCTSD

NAVAL AVIATION SYSTEMS TEAM







**PROCUREMENT**

- SOURCE SELECTION
- CONTRACT MONITORING
- TRAINER DEVELOPMENT
- TEST AND EVALUATION
- DESIGN AND DOCUMENTATION
- DRAWINGS

**IOC**



**OPERATION AND SUPPORT**

- CONTRACTOR MAINTENANCE
- INSTRUCTOR TRAINING
- CONFIGURATION MANAGEMENT
- CURRICULA DEVELOPMENT



**FRONT-END ANALYSIS**

- REQUIREMENTS ANALYSIS
- MEDIA SELECTION
- FUNCTIONAL DEFINITION

**RFP**



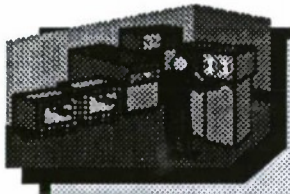
**SYSTEMS ENGINEERING**

- FUNCTIONAL DESIGN
- COST ANALYSIS
- PROCUREMENT PLAN
- LOGISTICS REQUIREMENTS
- CONTRACT DEFINITION



**RESEARCH AND DEVELOPMENT**

- RESEARCH
- EXPLORATORY DEVELOPMENT
- ADVANCED DEVELOPMENT
- IN-HOUSE PROTOTYPE
- TECHNOLOGY TRANSITION

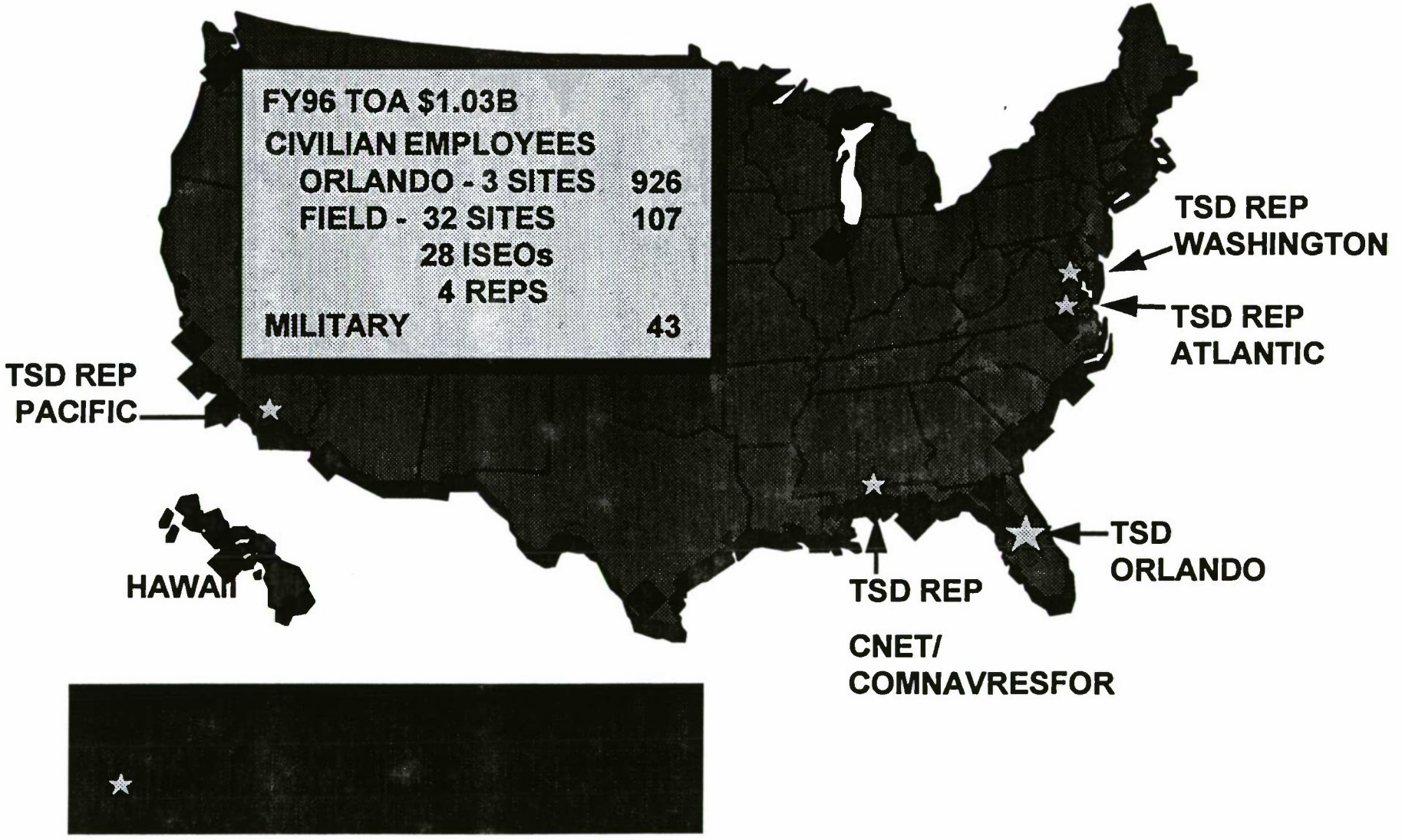


**UPDATE AND MODIFICATION**

- OVERHAUL
- KEEP CURRENT MODIFICATIONS
- INSTRUCTIONAL IMPROVEMENTS
- COMPUTER REHOST
- TECHNICAL IMPROVEMENTS

CBBW0008A

# NAWCTSD FIELD SUPPORT




CB0007e

# NAWCTSD
## MAJOR PROGRAMS

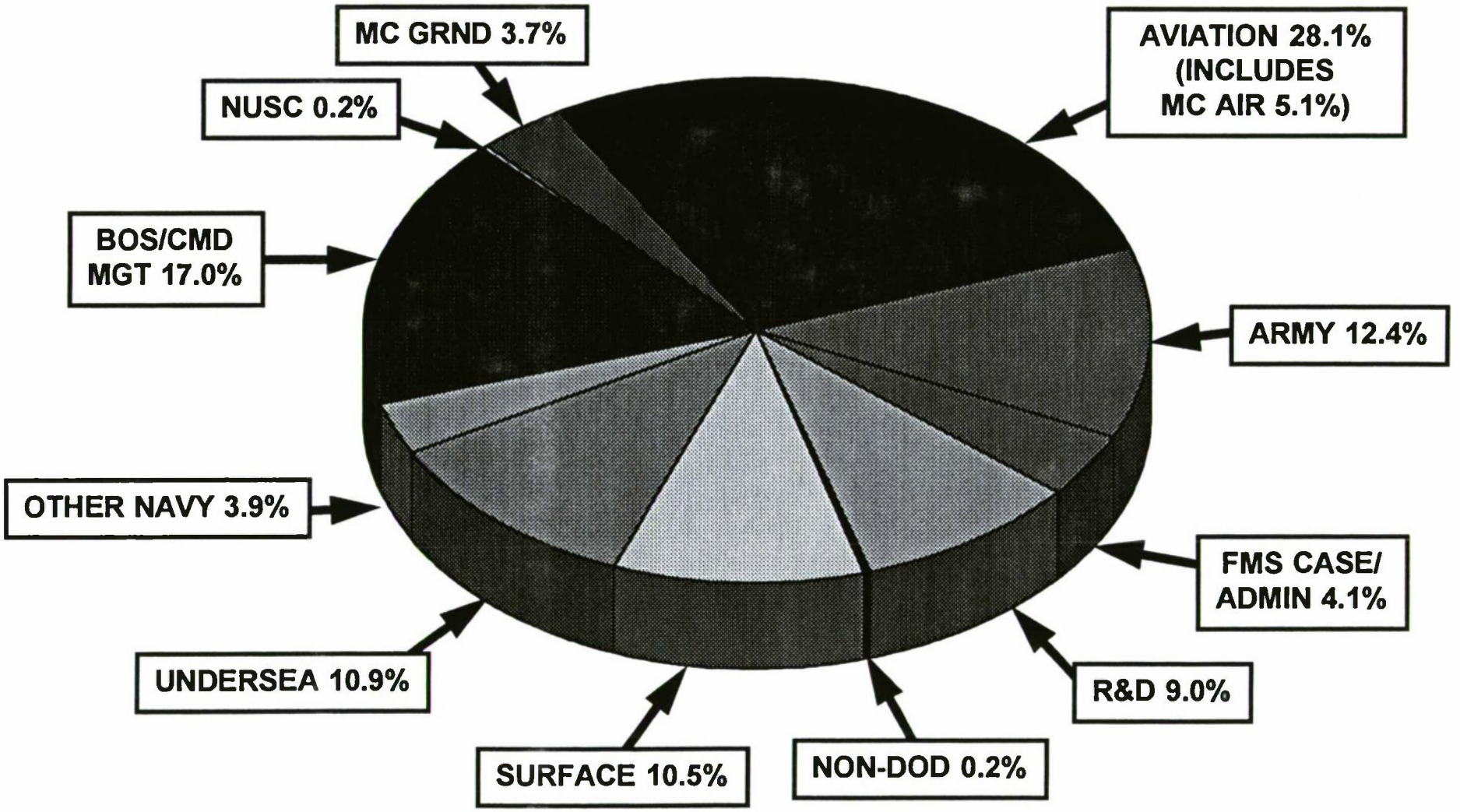
NAVAL AVIATION SYSTEMS TEAM

| AVIATION | USMC | SURFACE | UNDERSEA | BATTLEFORCE | RESEARCH & TECHNOLOGY |
|---|---|---|---|---|---|
| AV-8B | M-60 | CIWS | TRIDENT | * E-3/E-6A | INSTRUC TECH |
| AV-PHYS | IST | BARGE FERRY | SSN-688 | * JTCTS | NETWORKING |
| A-SCHOOL | * PGTS | PIERSIDE | SEAWOLF | EP-3/ES-3 (MAST) | TADMUS |
| ATC | M1A1 | PROPULSION | NEW SSN | * WISSARD | EMBEDDED TRNG |
| AH-1W | UMTS | FIRE FIGHTING | IUSS | * UAV | VIRTUAL ENVIRONS |
| EA-6B | ISMT | USCG BUOY TENDER | PERISCOPE | * M&S | SENSOR SIM |
| E-2C/C-2A | AAAV | LCAC | ACOUSTIC TRNG | C2P | WEAPON TEAM SIM |
| CH-46 | LAV-AD | SDVT | NAVIGATION-PILOTING | EW | SCENARIO DEV |
| CH-53 | LAV-AT | COMS | SHIP CONTROL | * TIDES | SIMSICK |
| CACT | LAV-AG | BFTT | SUB-BFTT | CRYPTOLOGIC | AIRCREW COORD |
| COMS/CSI | CAST | TACDEW | DAMAGE CONTROL | OTT | STARS |
| F-14 | AAV | FORWARD OBSERVER | AIM | DIS | SBIR |
| HH-65 | MILES | ASW TEAM TRAINERS | COMS | AUTEC | TECHNOLOGY TRANSFER |
| HH-60J | * TTES | USCG ON SCENE COORD | CIS | CADB | DISTRIBUTED/JOINT TRNG (MDT²) |
| ISD/ICW | DFO/MULE | BRIDGE/CIC | SUB-EMPLOYMENT | COMS | |
| JAST | COMS | RADAR NAVIGATION | CIITA | * JTASC | |
| * JPATS | CVATS | AIM | SUB HM&E | FAA | |
| KC-130 | EMERALD LIGHT | LPD17 | TORPEDO ROOM | | |
| LSO | TSA(USCG GRND) | USCG COASTAL PTRL BOAT | | | |
| MH-53 | USMC DIS | DIVER HELD SONAR | | | |
| P-3 | | CONSTRUCTIVE MECH MAINT | | | |
| SH-2G | | 21ST CENTURY COMBATANT | | | |
| SH-3H | | MARKSMAN TRAINER | | | |
| SH-60B/F | | USCG ICEBREAKER | | | |
| S-3 | | USCG ACCES | | | |
| T-2C | | USCG SCCS | | | |
| TH-57C | | | | | |
| T-45 | | | | | |
| T-34/44A | | | | | |
| UNFO | | | | | |
| UH-1N | | | | | |
| V-22 | | | | | |

## *NAWCTSD JOINT PROJECTS

CB0011B

# FY96 WORKYEARS BUDGETED TOTAL 1033




CB0010B

# INTERNATIONAL PROGRAMS

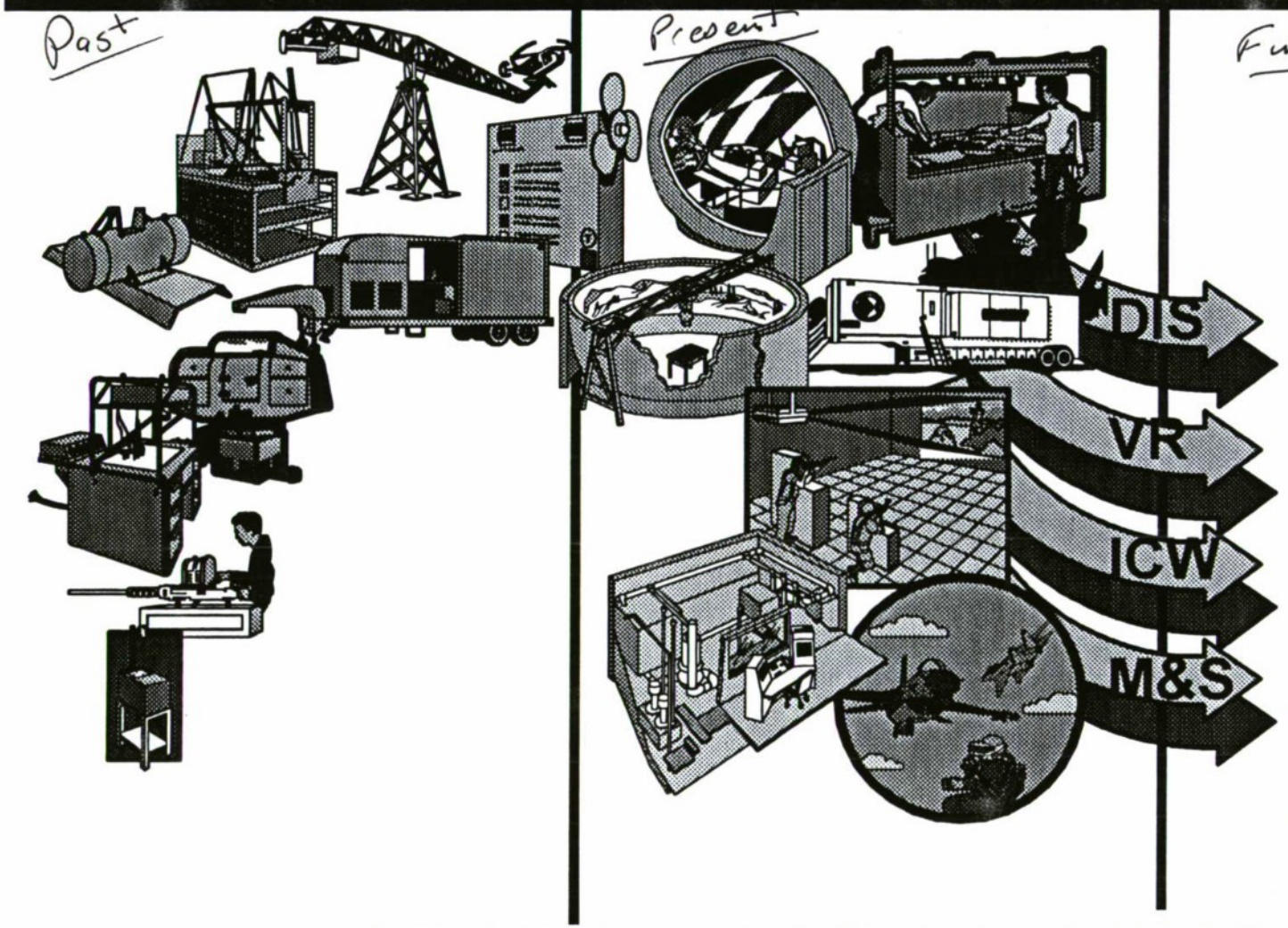
## Training Material Cases (54) Value $290M
## Prospective Cases [30] Value $165M




- REDUCES COST & RISK; POTENTIAL FOR LEVERAGING
- PROMOTES INTEROPERABILITY & COOPERATION WITH ALLIED SERVICES
- CREATES FUTURE SALES OPPORTUNITIES

CB0012B

# TRAINING SYSTEMS




- SMALLER
- RECONFIG-URABLE
- TRANSPORT-ABLE
- INTEGRATED
- DISTRIBUTED

# WHY ARE WE HERE?

$$R = f ( E + / * T )$$

# Advanced Planning Briefing to Industry
## 30 April 1996

NAVAL AVIATION SYSTEMS TEAM




**CAPT Tom Freeland**
**Aviation Program Director**
**Naval Aviation Systems TEAM**
**Orlando**
**(407) 380-8109**
**thomas_freeland@ntsc.navy.mil** **http://www.ntsc.navy.mil**




# MISSION



## Acquire products and product support for

## Naval Aviation
## Training Systems

# PROGRAMS and SPONSORS



| Program | Sponsors |
|---|---|
| F-14D | N88 PMA-241 (PMA-205) |
| A-6E/EA-6 | N88 PMA-234 (PMA-205) |
| E-2/C-2 | N88 PMA-231 (PMA-205) |
| P-3/S-3 | N88 PMA-290 (PMA-205) |
| SH-60B/F / SH-2G | N88 PMA-299 (PMA-205) |
| JPATS | N88 PMA-273 (PMA-205) |
| F/A-18 | N88 PMA-265 (PMA-205) |
| T-45 | N88 PMA-273 (PMA-205) |
| UNFO | N88 PMA-200 (PMA-205) |

# PROGRAMS and SPONSORS

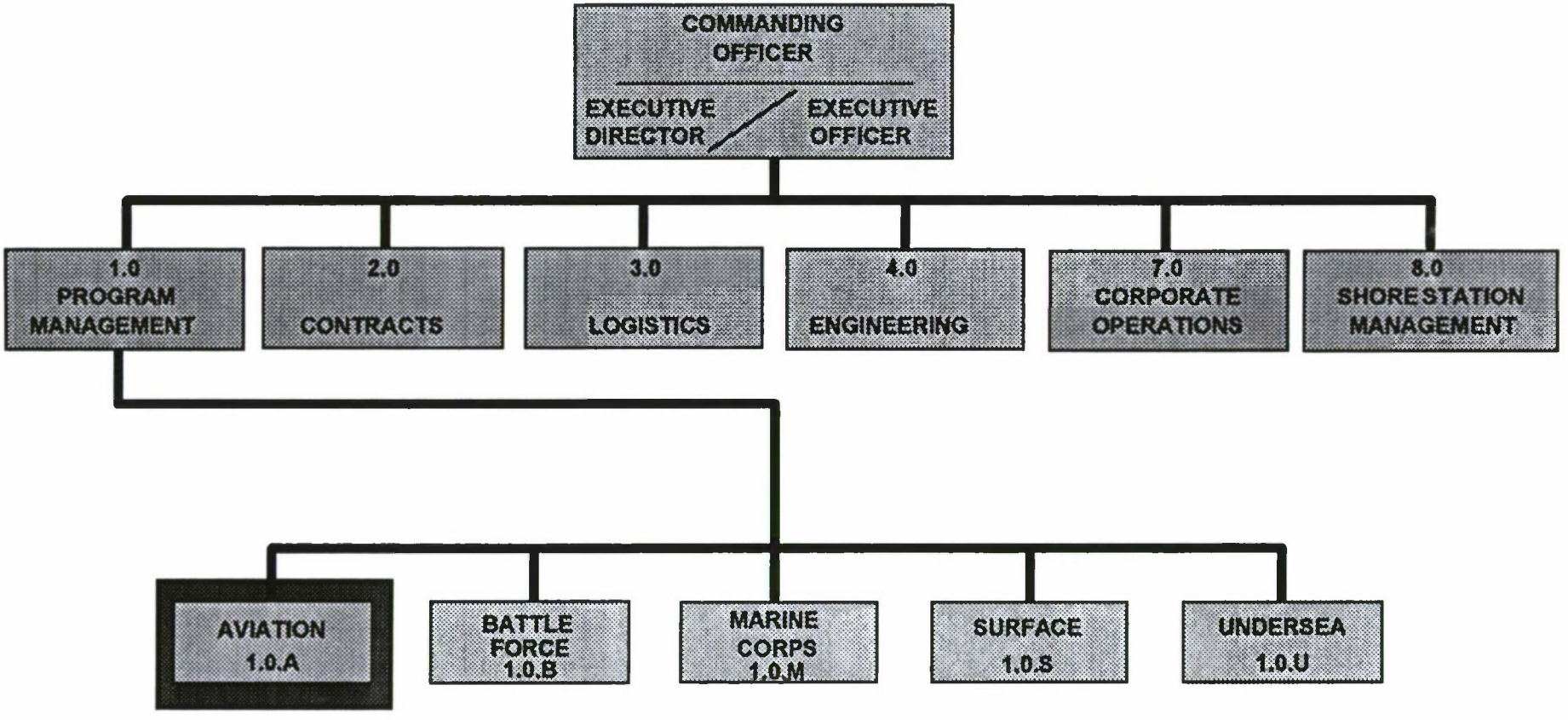
| | |
|---|---|
| ATC | N88 PMA-213 (PMA-205) |
| T-2/A-4 | N88 PMA(F)-225 (PMA-205) |
| T-44/T-34 | N88 PMA(F)-227 (PMA-205) |
| AH-1W | N88 PMA-276 (PMA-205) |
| AV-8B | N88 PMA-257 (PMA-205) |
| CH-46 | N88 PMA(F)-226 (PMA-205) |
| CH-53/MH-53 | N88 PMA-261 (PMA-205) |
| KC-130 | N88 PMA(F)-226 (PMA-205) |
| UH-1N | N88 PMA(F)-225 (PMA-205) |
| V-22 W/MAINT | N88 PMA-275 (PMA-205) |

# PROGRAMS and SPONSORS



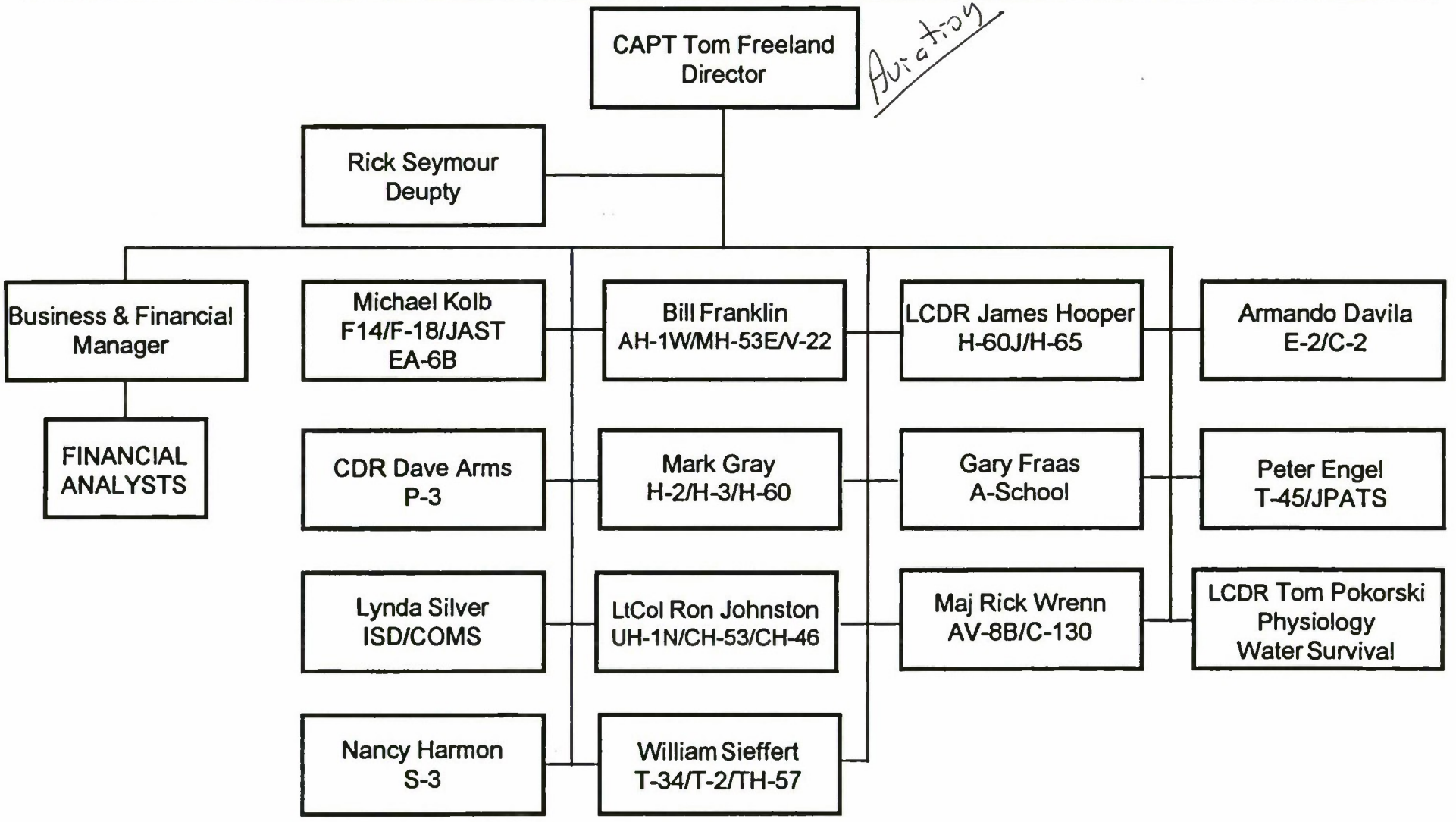
| | |
|---|---|
| GENL AV'N/A-SCH/LSO | N889 PMA-205 |
| HH-60J/HH-65 | COAST GUARD |
| PHYSIOLOGY | N889/BUMED (PMA-205) |
| WATER SURVIVAL | N889/BUMED (PMA-205) |
| JAST | JAST PROGRAM OFFICE |
| COMS/CSI/CACT | TYCOM |

# NAWCTSD


COMMANDING OFFICER
EXECUTIVE DIRECTOR
EXECUTIVE OFFICER
1.0 PROGRAM MANAGEMENT
2.0 CONTRACTS
3.0 LOGISTICS
4.0 ENGINEERING
7.0 CORPORATE OPERATIONS
8.0 SHORE STATION MANAGEMENT
AVIATION 1.0.A
BATTLE FORCE 1.0.B
MARINE CORPS 1.0.M
SURFACE 1.0.S
UNDERSEA 1.0.U

# 1.0.A




CAPT Tom Freeland
Director
Aviation
Rick Seymour
Deupty
Business & Financial Manager
FINANCIAL ANALYSTS
Michael Kolb
F14/F-18/JAST
EA-6B
Bill Franklin
AH-1W/MH-53E/V-22
LCDR James Hooper
H-60J/H-65
Armando Davila
E-2/C-2
CDR Dave Arms
P-3
Mark Gray
H-2/H-3/H-60
Gary Fraas
A-School
Peter Engel
T-45/JPATS
Lynda Silver
ISD/COMS
LtCol Ron Johnston
UH-1N/CH-53/CH-46
Maj Rick Wrenn
AV-8B/C-130
LCDR Tom Pokorski
Physiology
Water Survival
Nancy Harmon
S-3
William Sieffert
T-34/T-2/TH-57

# FOCUS



- TRAINER CURRENCY
  - Contracting Efficiencies
  - Long Term Partnerships
  - In Service Engineering
- TRAINER RELOCATION
  - FRS Single Siting
  - BRAC
- TRAINER OPERATIONS / MAINTENANCE
  - COMS
  - CSI/CACT
  - ISD

# ACQUISITIONS

## General Aviation Trainer Programs

| | CA | FUNDED |
|---|---|---|
| AE SCHOOL 6E36-40 Electrical System Trainers<br>- Hands-On Hardware and CBT. | 1/97 | YES |
| LSO 2H111<br>- Rehost/Block Upgrade | 1/98 | YES |

# ACQUISITIONS

## Weapon System: E-2C

| | CA | FUNDED |
|---|---|---|
| C-2A | 2/98 | NO |
| - OFT S/N 2 | | |
| E-2C WST (15F8A/C) | 3/98 | NO |
| - Cooperative Engagement | | |
| E-2C WST (15F8A/B/C) | 3/99 | NO |
| - Mission Computer Upgrade/SATCOM Integration | | |

Program Manager: Armando Davila (407) 380-4497 / DSN 960-4497

# ACQUISITIONS

## Weapon System: EA-6B

| | CA | FUNDED |
|---|---|---|
| Block 89A Upgrade<br>- Major systems improvements affects all EA-6B training devices | 6/97 | YES |
| 2F122 Conversion/Low Cost WST for Iwakuni | 12/97 | YES |
| 2F114 Visual System Update<br>- Retrofit 2F114 Visual System into 2F119A | 2/98 | YES |
| 15E34A Test Equipment Replacement | 3/99 | YES |

Program Manager: Mike Kolb (407) 380-8152 / DSN 960-8152

# ACQUISITIONS

## Weapon System: F-14B/A

| | CA | FUNDED |
|---|---|---|
| 2F169 Visual System Upgrade | 2/98 | YES |

Program Manager: Mike Kolb (407) 380-8152 / DSN 960-8152

# ACQUISITIONS

## Weapon System: CH-53

| | CA | FUNDED |
|---|---|---|
| **CH- 53D OFT** | | |
| - Move to Hawaii | 8/96 | NO |
| - Block Mod including GPS, ARC210, #2 Eng Fire Det, NVG EXT lights, Crashworthy seats | 2/99 | YES |

# ACQUISITIONS



## Weapon System: UH-1N

| | CA | FUNDED |
|---|---|---|
| **UH-1N WST** | | |
| - COMNAV Phase B | 7/98 | YES |
| Electronic (Glass) Cockpit to Reduce Weight and Pilot Workload, Maximum Commonality with AH1W Glass Cockpit | | |

# ACQUISITIONS

## Weapon System: CH-46

| | CA | FUNDED |
|---|---|---|
| **CH-46E APT** | | |
| **- Block Mod including GPS, NVG/HUD, ARC-210, NVG COMP cockpit** | **1/99** | **YES** |

# ACQUISITIONS

## Weapon System: P-3

| | CA | FUNDED |
|---|---|---|
| **2F140 and 2F87(F)** | | |
| - Add GPS system to the five (5) 2F140 and six (6) 2F87(F) trainers | 3/98 | NO |
| **2F87(F)** | | |
| - Replace Visual system in six (6) 2F87(F) and two (2) 2F142(F) trainers | 4/98 | NO |

# ACQUISITIONS

## Weapon System: P-3

| | | |
|---|---|---|
| **All P-3 Training Devices** | **CA** | **FUNDED** |
| **- Provide Software/Hardware Engineering and Technical Services to P-3 for modification and support of ASW/ASUW trainers** | **1/99** | **NO** |
| **2F140 SLEP** | | |
| **- Modify four (4) 2F140 trainers to delete obselete parts to provide better operation and support.** | **3/99** | **NO** |

# ISD/COMS/CSI/CACT Programs

| | | Contract Award |
|---|---|---|
| | KC-130 COMS | 7/96 |
| | SH-60B/F COMS | 7/96 |
| | AIRLANT CSI | 7/96 |
| | CT-39/C-9B CACT | 8/96 |
| | UC-12B/C & C-20D CACT | 8/96 |
| * | CH-46/53 COMS | 9/96 |
| | E-6A COMS | 9/96 |
| | General Aviation/ASW ISD IQC | 10/96 |
| | NATRACOM COMS | 12/96 |

* New

Program Manager: Lynda Silver (407) 380-4484 / DSN 960-4484

# ISD/COMS/CSI/CACT Programs

| | Contract Award |
|---|---|
| AV-8B COMS | 6/97 |
| E-2C COMS | 6/97 |
| S-3A/B COMS | 6/97 |
| AIRESFOR COMS | 6/97 |
| P-3C COMS (Barber's Pt) | 6/97 |
| CNATRA CSI | 7/97 |
| H-1 COMS | 5/98 |
| P-3C COMS (Brunswick) | 5/98 |
| Helo COMS | 5/98 |
| C-20G/C-130T COMS | 8/98 |

Program Manager: Lynda Silver (407) 380-4484 / DSN 960-4484

# ISD/COMS/CSI/CACT Programs

| | Contract Award |
|---|---|
| F/A-18 COMS | 6/99 |
| F-14A/D COMS | 6/99 |
| C-20G CACT | 6/99 |
| Helo ISD IQC | 10/99 |
| Aviation Physiology COMS | 3/00 |
| P-3C COMS (Jax & Whidbey) | 5/00 |
| AIRPAC CSI | 6/00 |
| NATTC COMS | 7/00 |
| Photo School COMS | 7/00 |
| Tactical Air ISD IQC | 10/00 |

Program Manager: Lynda Silver (407) 380-4484 / DSN 960-4484

# Surface Warfare Training Systems
# Business Opportunities




Sent EMAIL on 5-9-96 (Dan Taylor)


## CDR Patrick Rearden

**Surface Program Director**

**(407) 380-8361**

**patrick_rearden@ntsc.navy.mil** **http://www.ntsc.navy.mil**

# Surface Training Business Environment

- OPNAV Sponsor **Funding Reductions**
  - 60% cut in past three years; shore trainers, devices
  - Focus: Cost reduction; life cycle (COMS/Mods)
- Opportunity - **Diversification**
  - Coast Guard: Performance Technology Center
  - BFTT, MCM: Analyses, software, "desktop options"
  - Foreign Military Sales: Traditional devices
- Opportunity - **New Ship Development**
  - Advanced ship class work: embedded technologies, total ship training

# TSD's Advanced Ship Class Objectives

- Establish a **Vision, Strategy** and Integrated Operating **Plan** for Surface Ship Training
- **Develop and Maintain** a Cross-Functional Core Team Linked to all Program Offices
- Achieve **Cost and Training Efficiencies**
  - Introduce, analyze and refine embedded technologies
  - Common systems, reduced costs, no/low risk implementation

# Near-Term Surface Training Systems Opportunities

- **LPD-17** (PMS-317)
  - RFP Released, 8 April 1996
  - Contract Award, Autumn 1996
  - Integrate Existing Systems, Organizations, Standards and Resources
  - Efficient ship training: Surface, USMC, Aviation
- **Smart Ship**
  - Low-cost/risk alternatives to reduce crew workload
  - FY 96/97 installation on USS Yorktown and Harry Hill
  - Web Site: http://www.dt.navy.mil/smartship

# Long-Term Surface Training Systems Opportunities

- **SC-21** (PMS-400R)
  - Concept Exploration (MS 0) phase; define ship mission, characteristics
  - ** – Integrate training technologies within ship systems
- **CV(X)**
  - Concept Exploration (MS 0) phase; integrate SC-21 technologies
  - Define the ship and aircraft embarked

# Changing Nature of Surface Training

- **Traditional:**
  - Build training devices to replicate equipment
  - Result: Unaffordable shore-based training systems
- **Emerging:**
  - Work with Shipyard or Systems Prime Contractor to integrate training into each ship
  - Plan all warfare area training simultaneously
  - **Result:** Total Ship Training
  - **Result:** Reduced training costs and shore dependency, uniformity

# ADVANCED PLANNING BRIEFING TO INDUSTRY




**ROBERT R. TYLER, COL USMC**
**NAWCTSD MARINE CORPS PROGRAM DIRECTORATE**
**30 APRIL 1996**
**Robert_Tyler@ntsc.navy.mil** **http://www.ntsc.navy.mil**

# CMC PLANNING GUIDANCE

## COMMANDANT'S FOCUS:

- WINNING WARS
- MAKING MARINES

## COMMANDANT'S FIVE PILLARS:

- WARFIGHTING
- PEOPLE
- CORE VALUES
- TRAINING AND EDUCATION
- NAVAL CHARACTER

30 APR 96

# STRATEGY

## HOW WE GET THERE:

**Jointness**

**Technology to enhance:**

- **Speed**
- **Protection**
- **Lethality**
- **Tactical Mobility**

**Training and Education:**

- **Simulations**
- **Virtual Reality**
- **Models**
- **Warfighting Games**
- **Interactive Training**
- **Warfighting Lab**

30 APR 96

# ADVANCED AMPHIBIAN ASSAULT VEHICLE (AAAV)

NAWC
Training Systems Division
NAVAL AIR WARFARE CENTER

The AAAV program is presently in source selection. Our role is to support the program manager relative to the vehicle's training requirements. It is anticipated that there will be requirements for various training systems/devices during the program's life cycle.

Training Technology currently doing research.

30 APR 96

# COMBAT VEHICLE TRAINING SYSTEMS (CVTS)

CVTS:

Programs

- Combat Vehicle Appended Training Systems (CVATS)
- Combat Vehicle Institutional Training System (CVITS)

Purpose

- to satisfy the individual and collective training requirements for the AAV, LAV-25, & M1A1 platforms

30 APR 96

# COMMANDANT'S WARFIGHTING LABORATORY (CWL)

**CWL is an ongoing program under CG, MCCDC that is intended to:**

- serve as the integrating ground for new technologies
- be the focal point for warfighting refinements
- ensure that emerging technologies for the individual Marine are brought into service expeditiously and effectively
- be responsible for development, field testing, and implementation of future operational/functional concepts, and potential doctrinal, organizational, training, educational, and support solutions.

30 APR 96

# EMERALD LIGHT

Emerald Light is an initiative to enhance interoperability between services force projection training and achieve DOD commonality in live training centers. It consists of two phases:

Phase I - demonstrate the capability to analyze effectiveness of instrumentation for force on force training and allow empirical analyses of new tactics and operational systems. (January 97)

Phase II - instrument and provide CTC After Action Review capability to MCAGCC , 29 Palms. (September 00)

30 APR 96

# RANGE INSTRUMENTATION SYSTEMS (RIS)

RIS will provide a state - of- the - art automated data collection and analysis system that will:

- support the control of missions/exercises by collecting data from instrumented entities.
- be interoperable with other ground and air range instrumentation systems in an ADS environment to support combined operations and training.
- incorporate instrumented live fire training within the exercise.

Initial operating capability in FY00 at MCAGCC. Camp Lejeune in FY01, Camp Pendleton FY02, and Quantico in FY 03.

# TEAM TARGET ENGAGEMENT SIMULATOR (TTES)

TTES is a developmental interactive system which provides the means to insert a dismounted combatant into the synthetic environment. Future efforts will include:

- Improving software
- Integrating dynamic terrain capabilities
- Developing an instructor shell
- Improving the visual system
- Networking multiple systems

30 APR 96

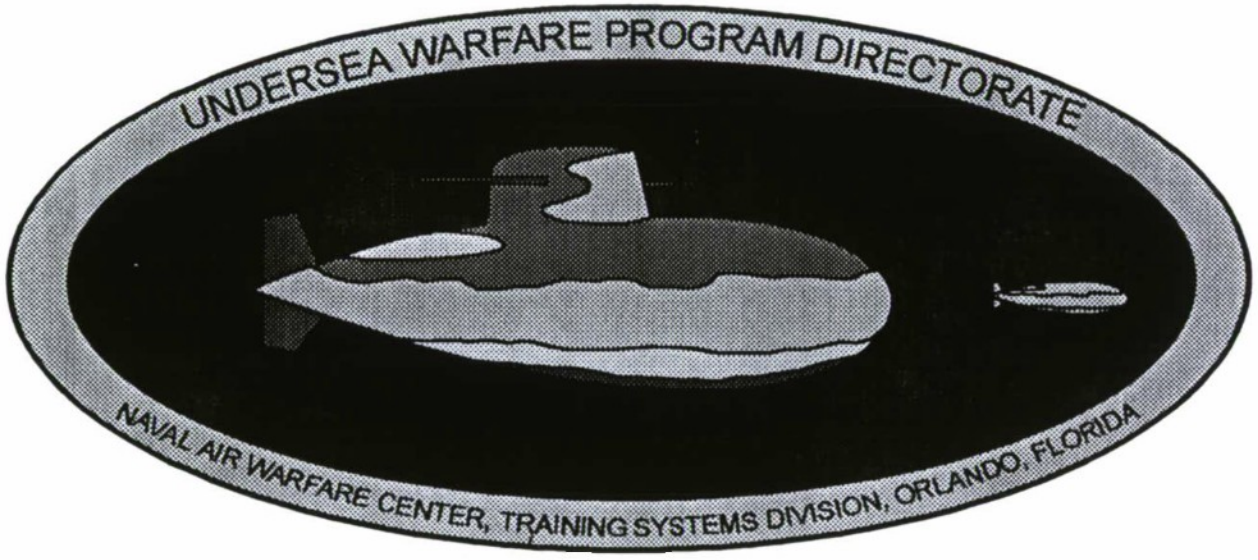
# CONCLUSIONS

Our policies are based on a long-range view with a singular focus on where and what we want the Marine Corps to be in the 21st century.

We will use improvisation, creativity, innovation, and advances in technology to meet the known and unknown challenges ahead of us.

We look to you, as part of our team, to help us meet our requirements and achieve our goals.

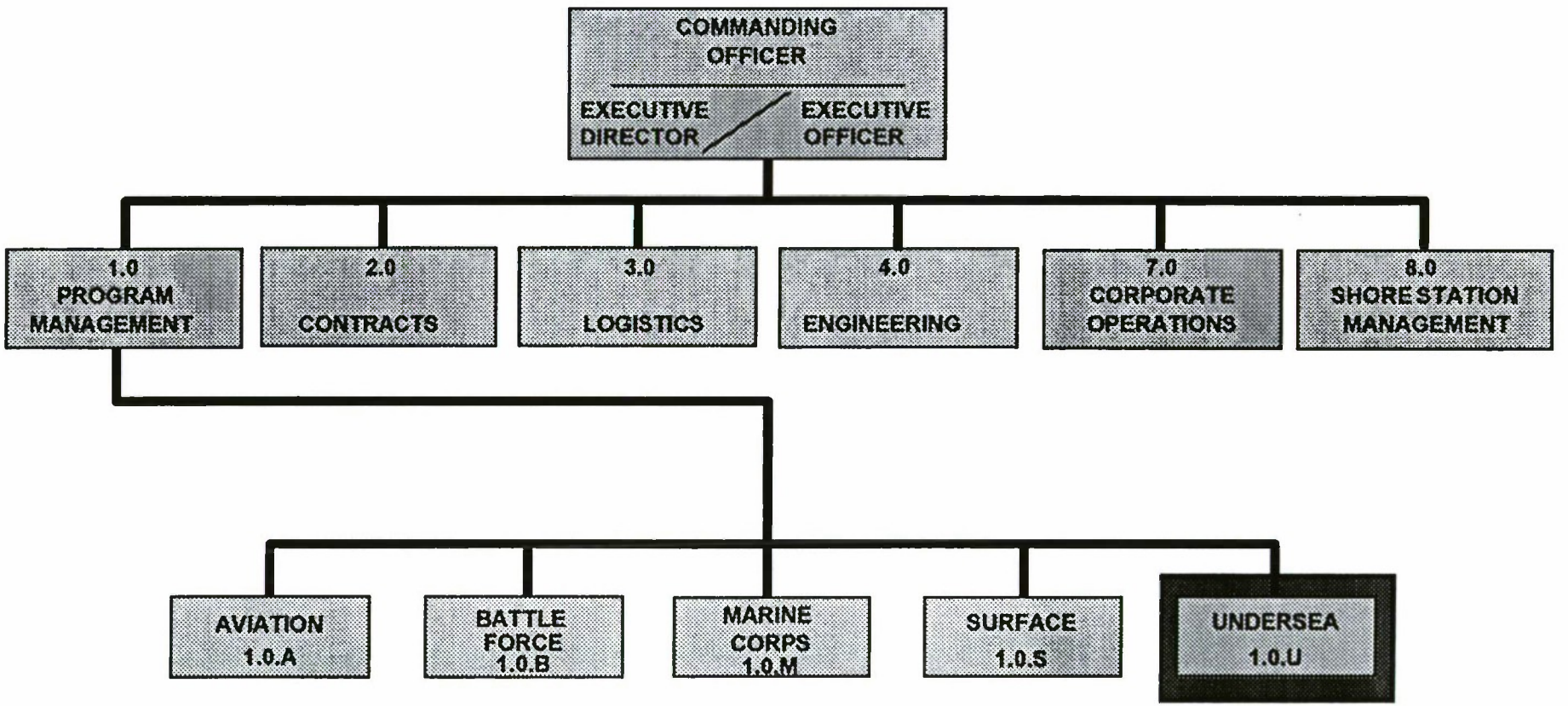
# Naval Air Warfare Center
# Training Systems Division




# Undersea Program
# Advanced Planning Brief to Industry

**Leo Harris - Undersea Program Director**
**(407) 380-8262**
**leo_harris@ntsc.navy.mil http://www.ntsc.navy.mil**

# NAWCTSD


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MARINE CORPS 1.0.M
SURFACE 1.0.S
UNDERSEA 1.0.U

# Undersea Program Acquisition Planning

- NSSN Ship Control Operator Trainer
- VE Submarine Ship Handling Trainer
- Submarine Piloting & Navigation Trainer
- Submarine Contractor Instructor, Maintenance and Training Support(CIMTS)
- Submarine Contractor Operations and Maintenance of Simulators (COMS)

# NSSN Ship Control Operator Trainer

- Supports New Attack Submarine (NSSN) Ship Control Pilot/Co-Pilot Operational Concept
- Supports Normal and Casualty Ship Control Operations
- Requires Motion Capability
- Planned Contract Award: Feb 1998

# Virtual Environment Submarine Ship Handling Trainer

- Supports Submarine Officer of the Deck(OOD) Training in Surfaced Ship Handling Skills
- Using VE and Helmet Mounted Display Technologies
- Providing 360 Degree Views in Restricted Waterways/Channels with Appropriate Traffic
- Providing Instructional Feedback Capabilities
- Plan to Procure Five(5) Units
- Planned Contract Award: Feb 2000

# Submarine Piloting & Navigation Trainer



- Replacement for Existing SPAN Trainers
- Supports Harbor Navigation & Piloting Training
- Provides Radar Landmass and Periscope Visual Capability
- Integrates with Virtual Environment Submarine Ship Handling Trainer
- Plan to Procure Five (5) Units
- Planned Contact Award: Feb 2001

# Submarine Contractor Instructor, Maintenance and Training Support

- Instructional Services using Government Materials and Methodologies
- Conducted at Seven(7) Training Commands
- Maintenance of Selected Technical Training Equipment
- Technical/Admin Support for Curriculum, Admin Systems, and Reference Centers
- Contract for One (1) Year Plus Four (4) One Year Options
- Planned Contract Award: Jan 1997

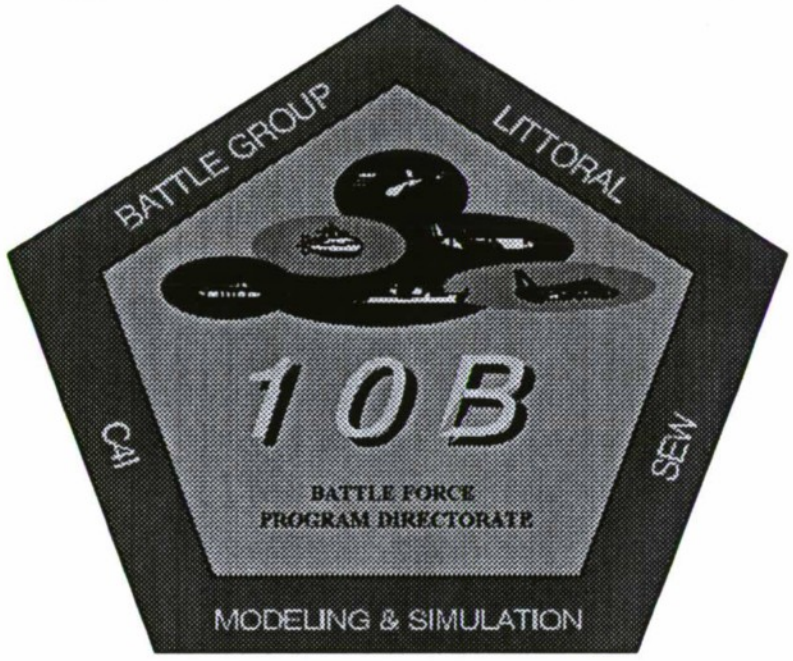
# Contractor Operation & Maintenance of Simulators

COMS

- Preventive and Corrective Maintenance of Training Systems and Selected Facility Systems
- Supply Support
- Provisioning of Selected Training Consumables
- Two Contracts Supporting Six(6) Sites
- Each Contract for One (1) Year Plus Four (4) One Year Options
- Planned Contract Award:
  - East Coast (Two Sites) Jul 1996
  - West Coast (Four Sites) Oct 1997

# Advanced Planning Briefing to Industry

30 April 1996

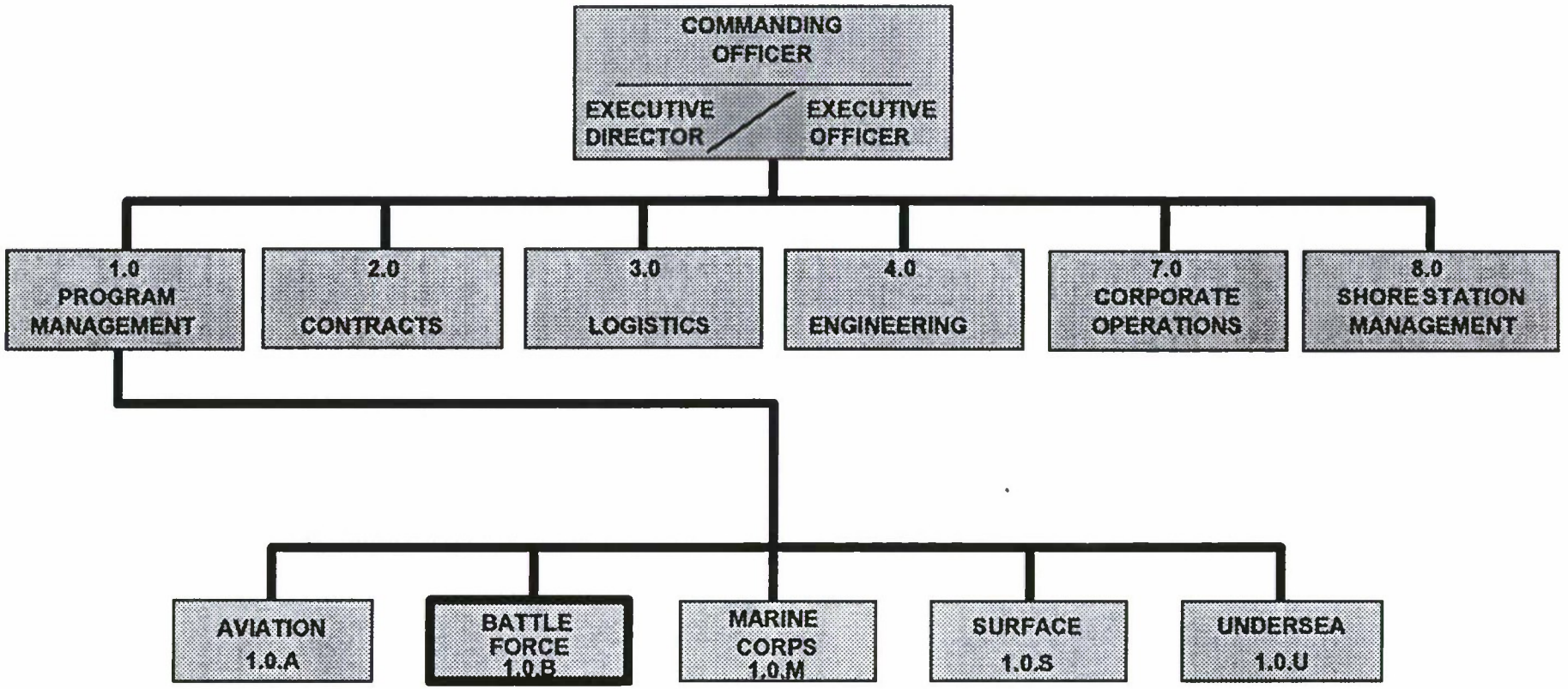



**CAPT Gary Quick**
**Battle Force Program Director**
**Naval Aviation Systems TEAM**
**Orlando**
**(407) 380-8102**
**gary_quick@ntsc.navy.mil** **http://www.ntsc.navy.mil**

# MISSION

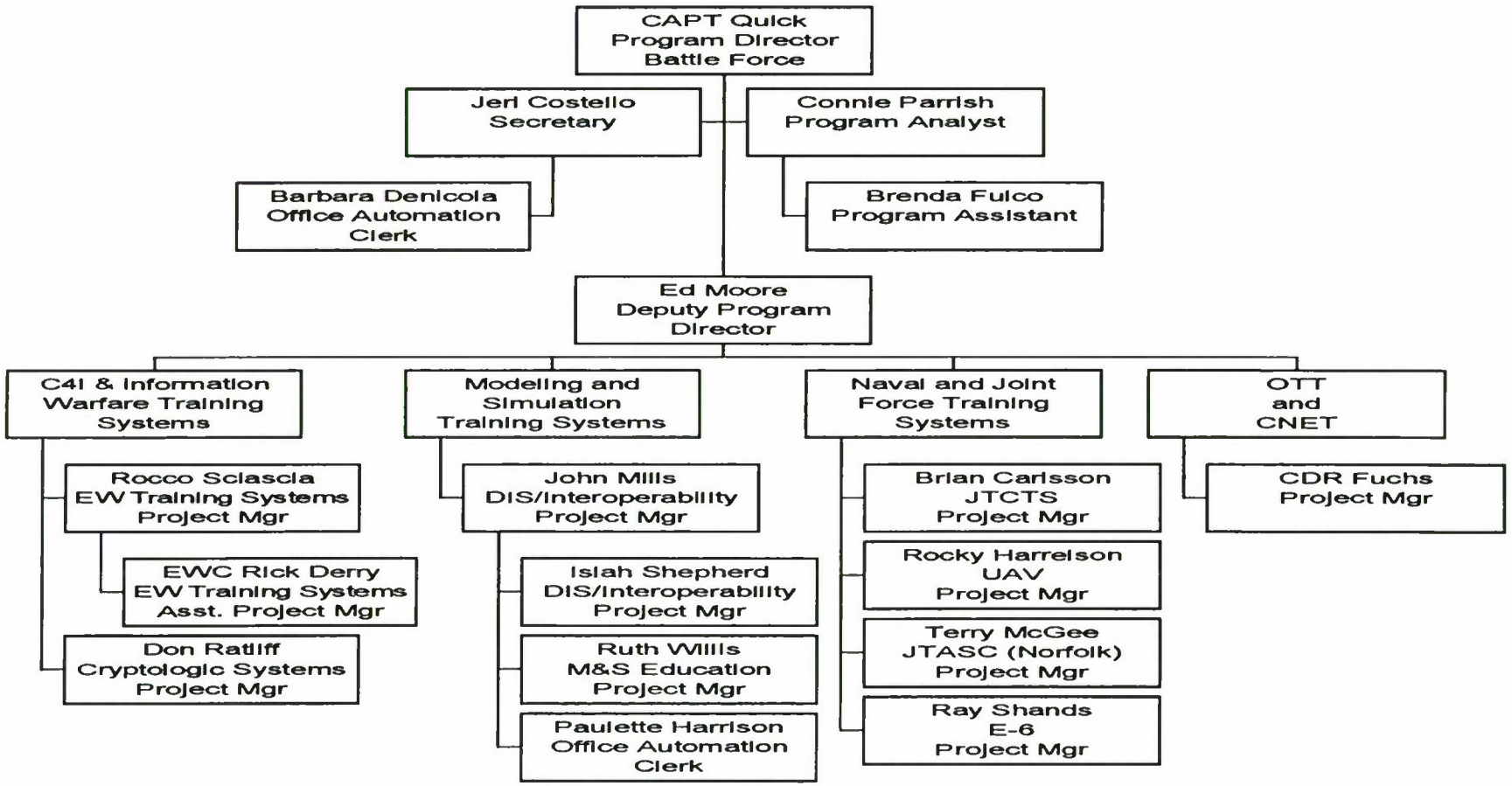
## DEVELOP TRAINING SYSTEMS AND PRODUCTS WHICH PROMOTE NAVY AND JOINT SERVICE INTEROPERABILITY, C4ISR, AND BROKER TRAINING TECHNOLOGY DATA AND INFORMATION

# NAWCTSD


COMMANDING OFFICER
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# BATTLE FORCE

## CODE 10B
## Battle Force Program Directorate



# PROGRAM SPONSORS

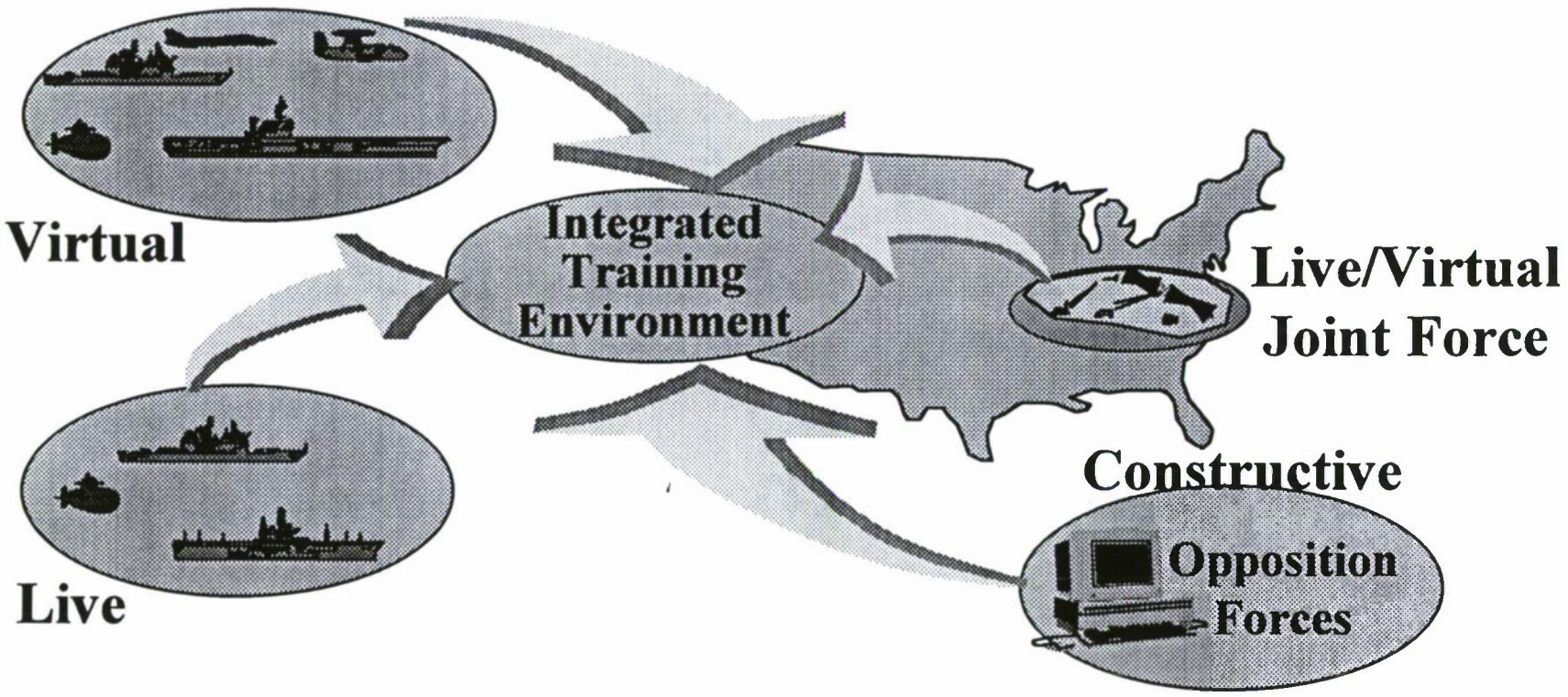
| PROGRAM | SPONSOR/CUSTOMER |
|---|---|
| **C4I & IW TRAINING** | |
| COMMAND & CONTROL PROCESSOR (C2P) | OPNAV N62G/PEO-SCS |
| CRYPTOLOGIC TRAINING SYSTEMS | OPNAV N889/NAVAIR |
| EW TRAINING SYSTEMS | OPNAV N889/NAVAIR |
| THREAT/INTELLIGENCE DATA EXTRACTION SYSTEM (TIDES) | OSD /NAVAIR |
| **MODELING & SIMULATION** | |
| MODELING & SIMULATION (NAVY's AGENT FOR DIS) | OPNAV N6M,, DMSO, ARPA, NAVAIR |
| **NAVAL & JOINT FORCES** | |
| JOINT TACTICAL COMBAT TRAINING SYSTEM (JTCTS) | OPNAV N889/NAVAIR |
| TACAMO (E-6A) | OPNAV N889/NAVAIR |
| UNMANNED AERIAL VEHICLE (UAV) | OPNAV N889/PEO (CU) |
| WHAT IF SIMULATOR SYSTEM FOR ADVANCED R&D (WISSARD) | ARPA /NAVAIR |
| MOBILE INSHORE UNDERSEA PROGRAM (MIUW) | OPNAV N866/ NAVRESFOR |
| NASA WIND TUNNEL | NASA /FAA |
| **OTT & CNET** | |
| OFFICE OF TRAINING TECHNOLOGY | OPNAV N75 /CNET |

# CURRENT ACTIVITIES

- SIMULATION BASED ACQUISITION
- INTEROPERABILITY - DIS & DIS ++
- OFFICE TRAINING TECHNOLOGY (OTT)
- CNET - TRAINING TECHNOLOGY ASSESSMENT
- JOINT TRAINING

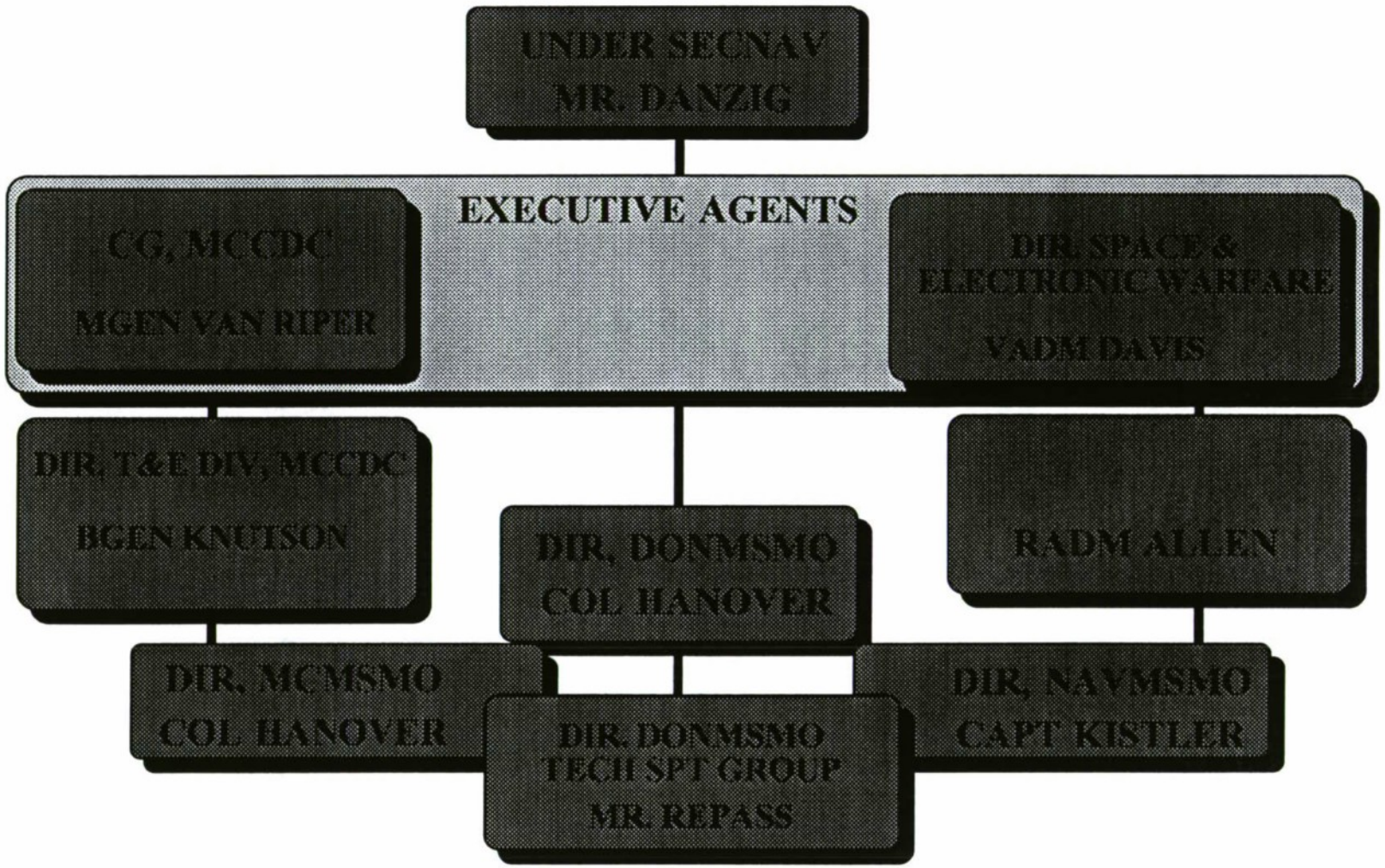
# NAVY Modeling & Simulation FOR TRAINING ...

## Improved Joint Warfighting Skills

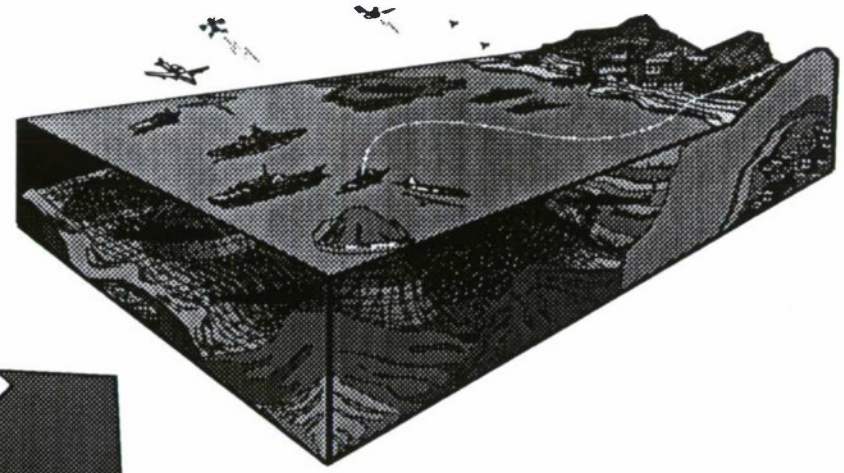



**Combine Live, Virtual, and Constructive Joint Forces to achieve core Naval competencies**

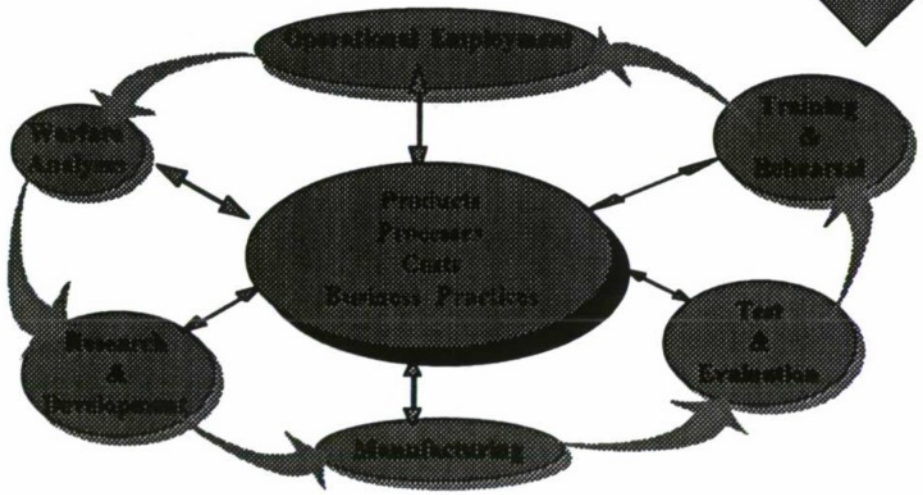
# Department of the Navy M&S Organization



# NAVY Modeling & Simulation FOR ASSESSMENT

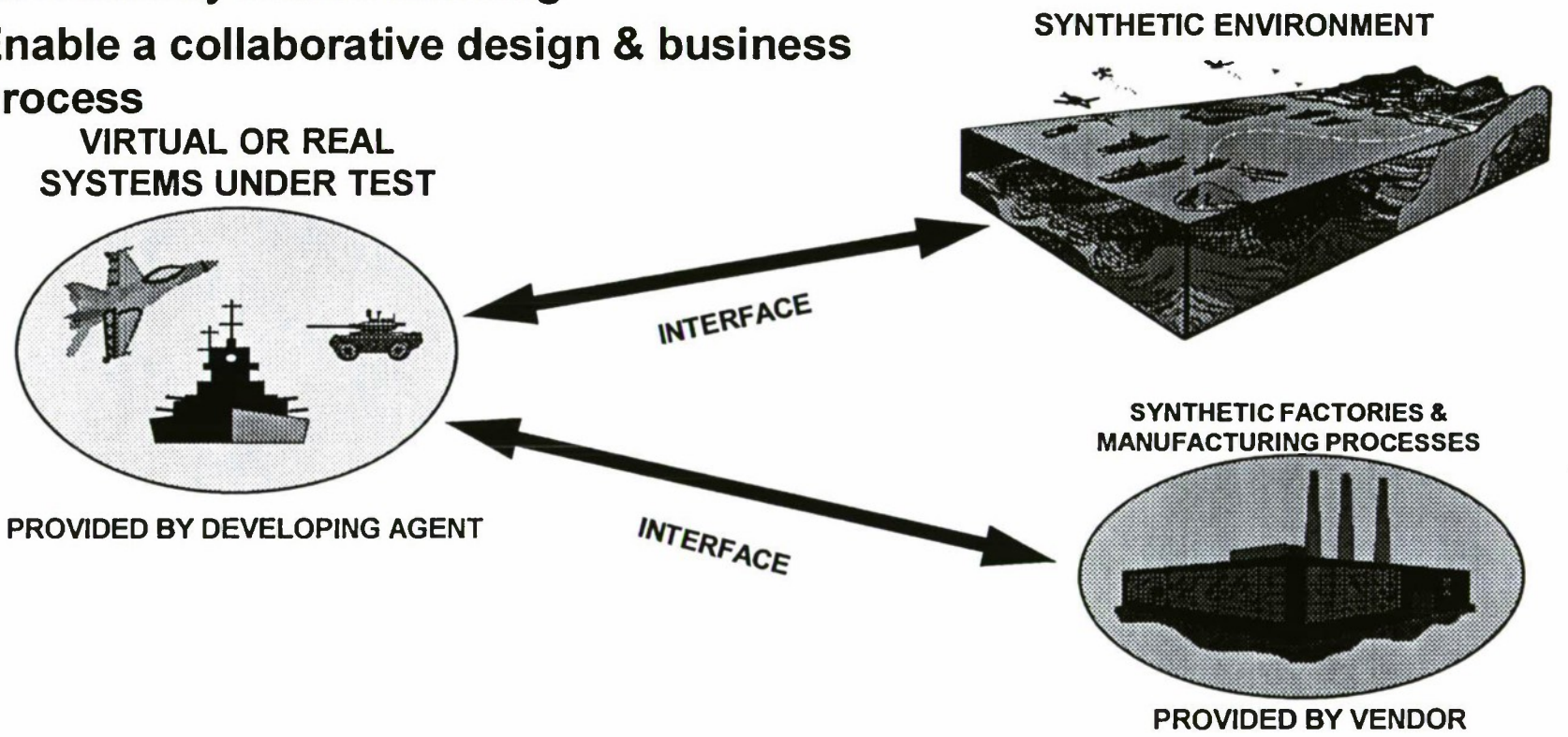


Synthetic Battlespace



# NAVY Modeling & Simulation FOR ACQUISITION

- Rapidly evaluate design iterations
- Optimize for performance, producibility, and affordability before building
- Enable a collaborative design & business process



# Office of Training Technologies (OTT) SPIDER

- Seamless Product Information, Data Exchange and Repository (SPIDER), Navy WWW site.
- Clearinghouse of information on training technology issues.
- Tool to assist government, industry, and academia leverage their capabilities in the area of emerging technologies.
- Provide network links to technology sites for industry and academia inaddition to DOD.
- Goal is to "Broker" training technology information and issues, and participate in Training Technology Assessment process

# TRAINING DELIVERY TECHNOLOGY REVIEW

- Navy wide effort to reduce training costs through the use of new technologies.
- TSD tasked with developing tools to identify, evaluate, and provide a cost analysis of technology options (mini-FEA).
- Emphasis for FY97 will continue with supporting CNO in the reduction of training costs through the use of technology in the delivery of training. With follow-on efforts on selected courses to:
  - Conduct full Front End Analysis (FEA)
  - Courseware design and revision
  - Expand applications of the Electronic Classroom

# Joint Tactical Combat Training System

- Large scale tactical training system capable of multi-mission/ multi-level training.
  - Battle group commanders
  - All warfare area commanders
  - Operator traning
- Two types of systems
  - At - Sea
  - Fixed range
- System interconnect air/surface and subsurface assets for a complete training scenario.
- Capable of combining live, virtual and constructive elements into the training scenario.

# WEB SITES for more Information




OTT Seamless Product Information, Data Exchange and Repository (SPIDER)

**HTTP://www.sc.ist.ucf.edu/~ott/**




Standards for Interoperability of Distributed Simulations

**HTTP://www.sc.ist.ucf.edu/~STDS**



Defense Modeling and Simulation Office

**HTTP://www.dmso.mil**

# Air Force Program

Advance Planning Briefing to Industry — Orlando FL 1 May 1996

Col Ron Stanfill
AF/xomw
Col Ronnie Stanfill
Directorate of Modeling, Simulation & Analysis.

AF Agency for Modeling & Simulation will be in Orlando.









































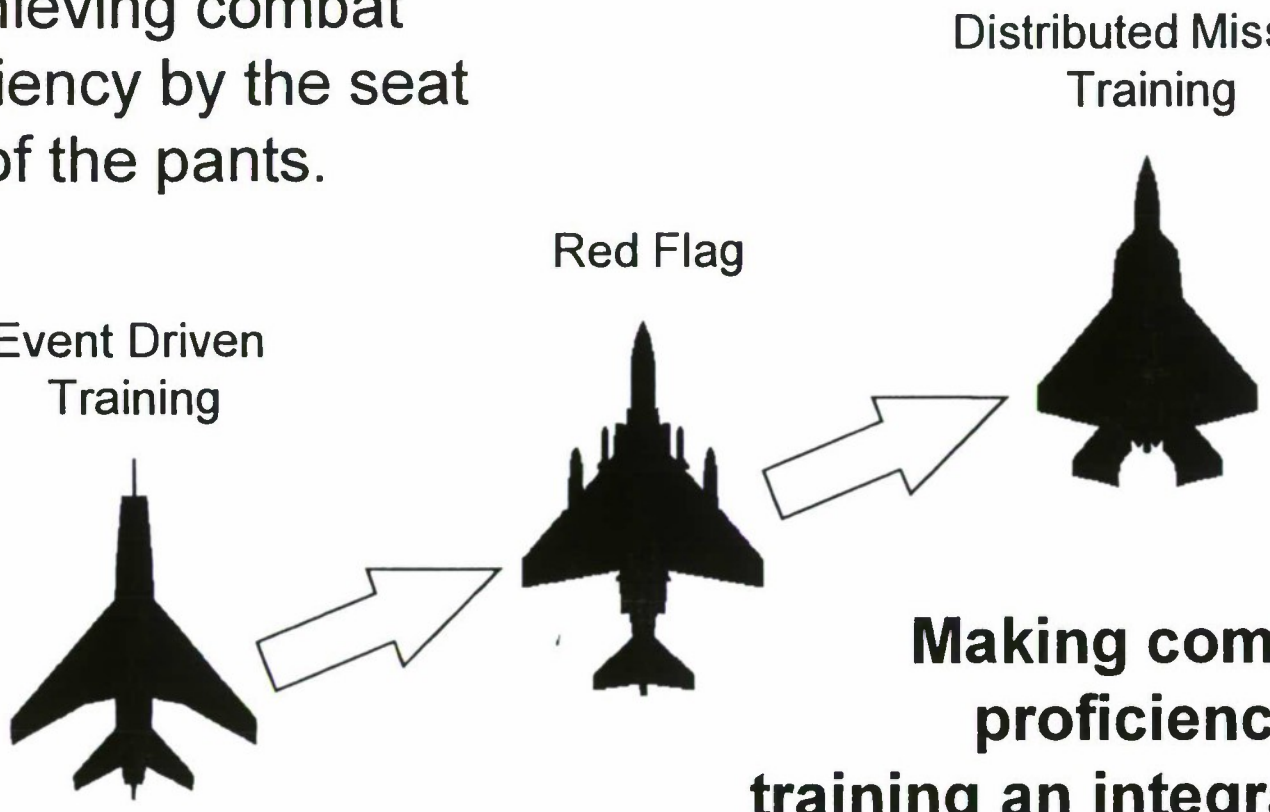

# Revolutionizing Training in the Air Force

## Anything Short of War is Training



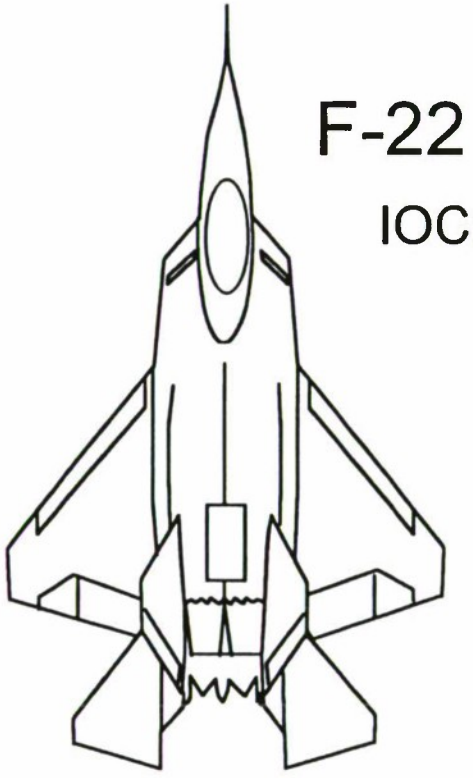
# What is Revolutionary?

Achieving combat proficiency by the seat of the pants.




**Making combat proficiency training an integral part of the weapon system.**

# Weapon System Training Constraints



F-22

IOC: Nov 04

**Operating Costs**
- **High O&M costs**
- **Attrition Risk**
- **Advanced Weapons Cost**

**Operating Constraints**
- **Supersonic Cruise**
- **Airspace/Range Limitations**
- **Environmental Concerns**

**Electronic Warfare Constraints**
- **Compromise**
- **Exploitation**
- **Availability**

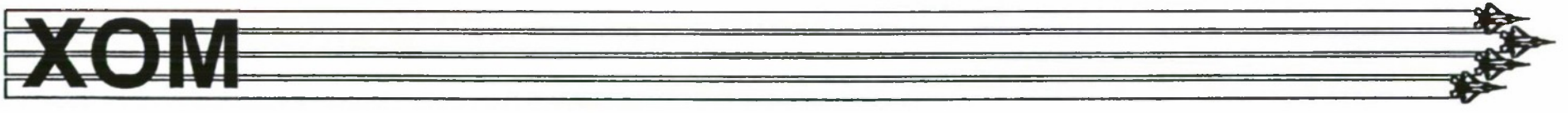
# Training Elements



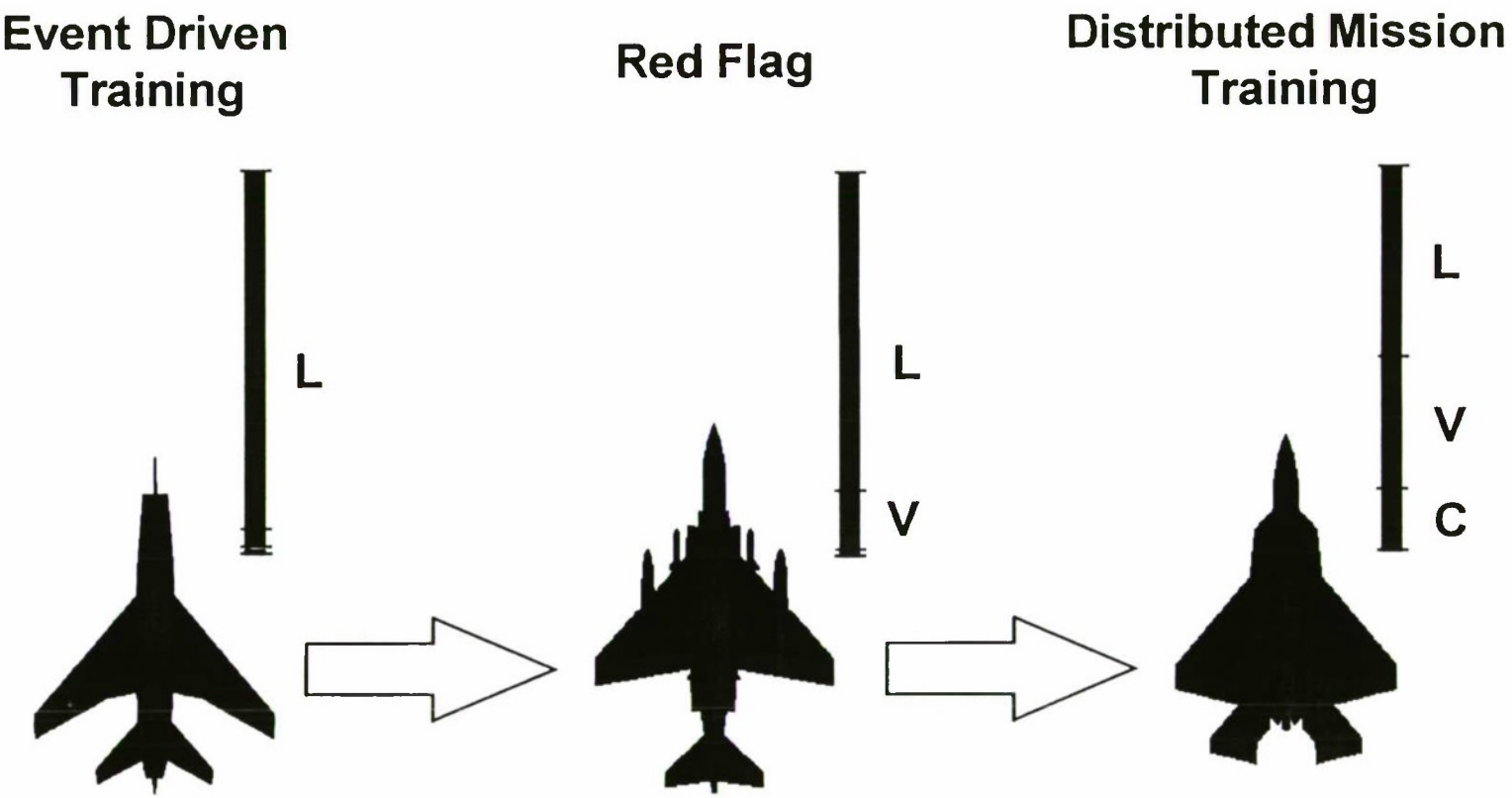
**Live: Real People in Real Systems**

**Virtual: Real People in Simulated Systems**

**Constructive: Simulated People in Simulated Systems**



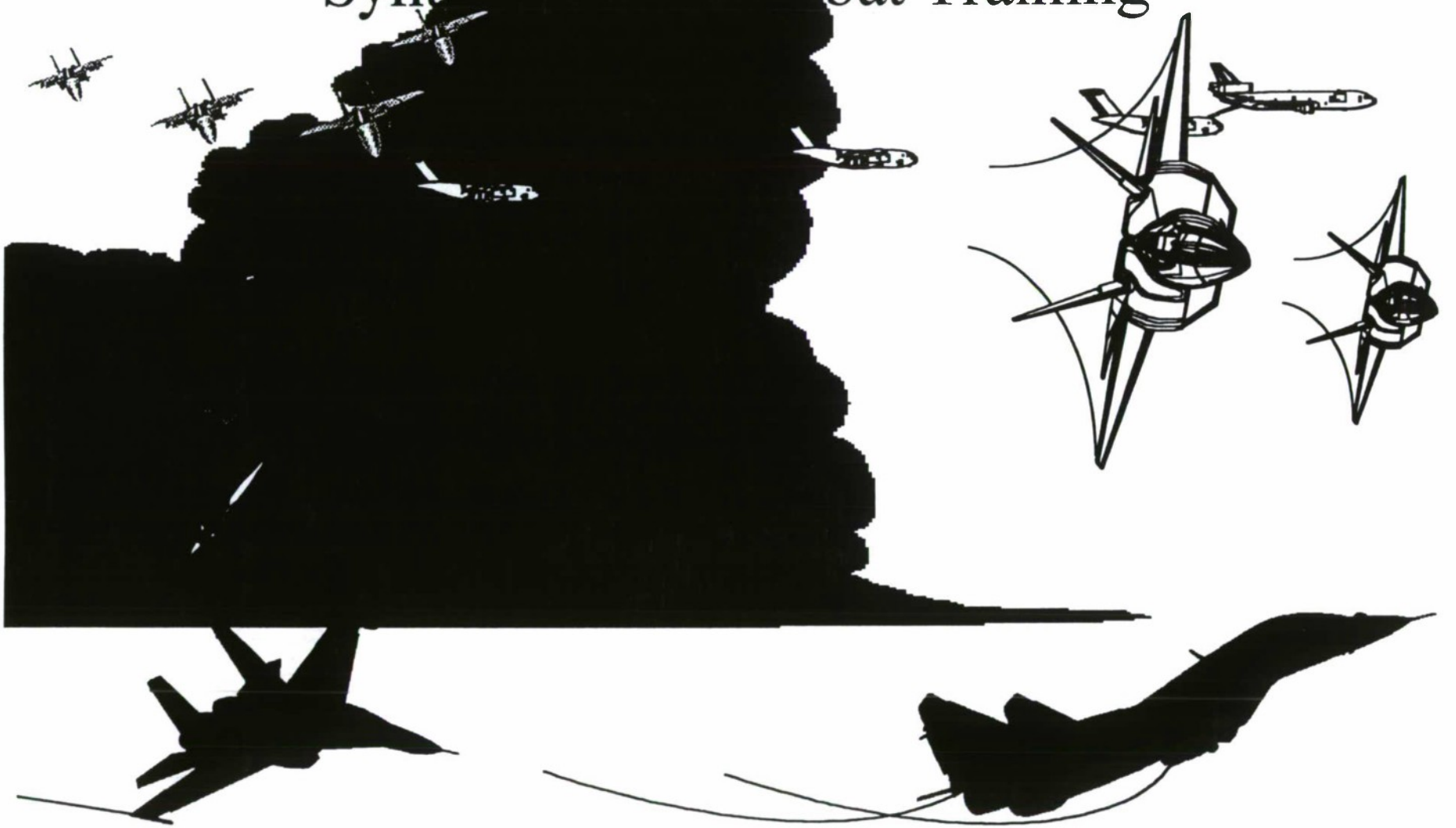
# What is Revolutionary?




XOM

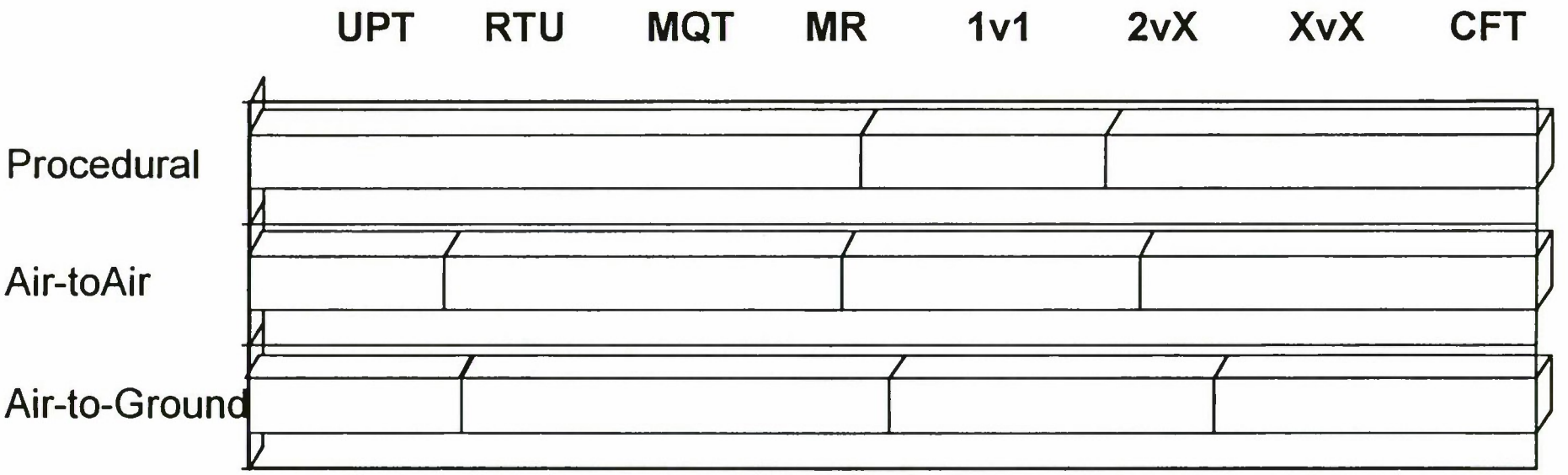
# Thi lutionary

## Synt bat Training



XOM

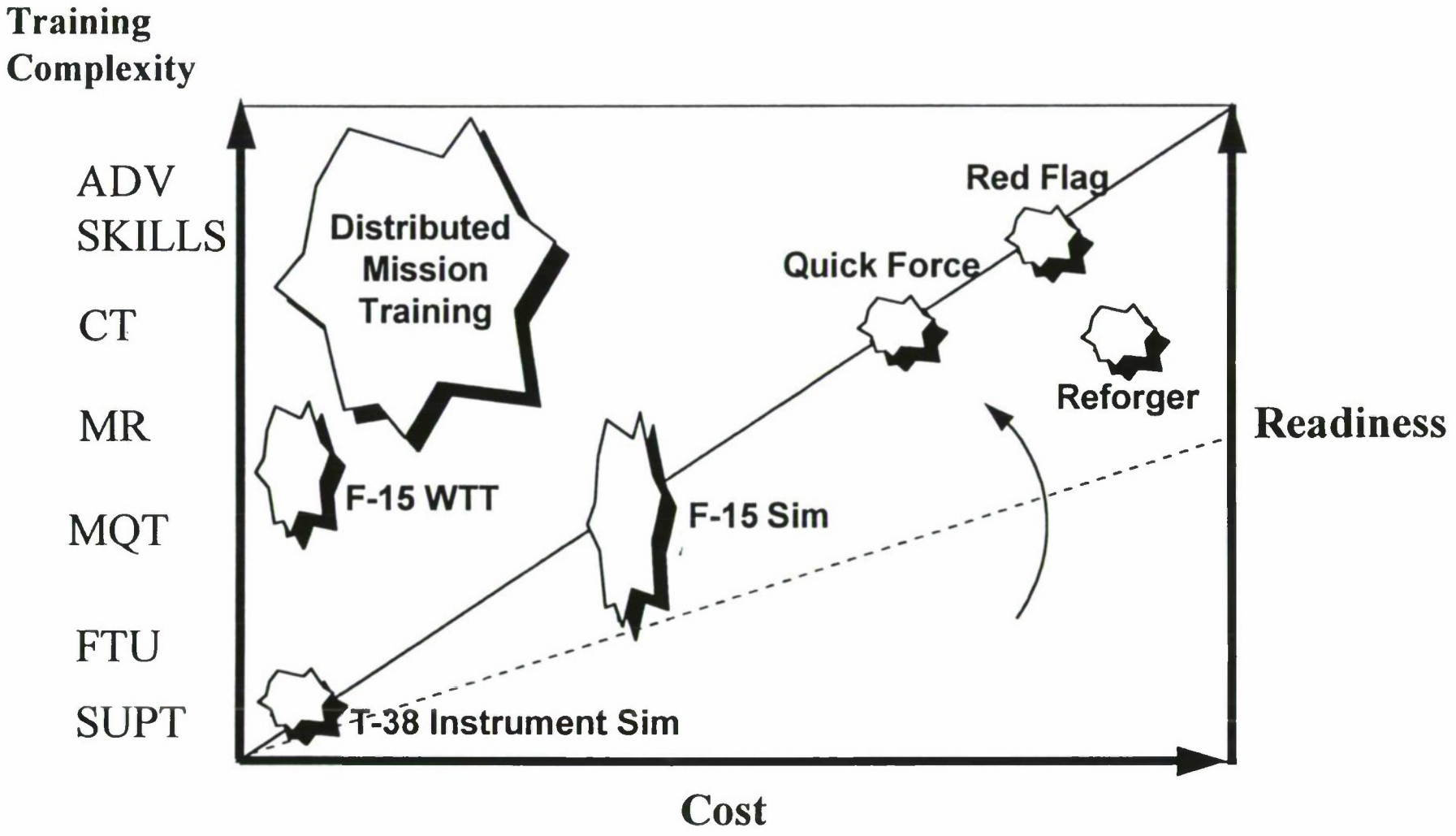
# Overall Assessment of Current Simulator Training



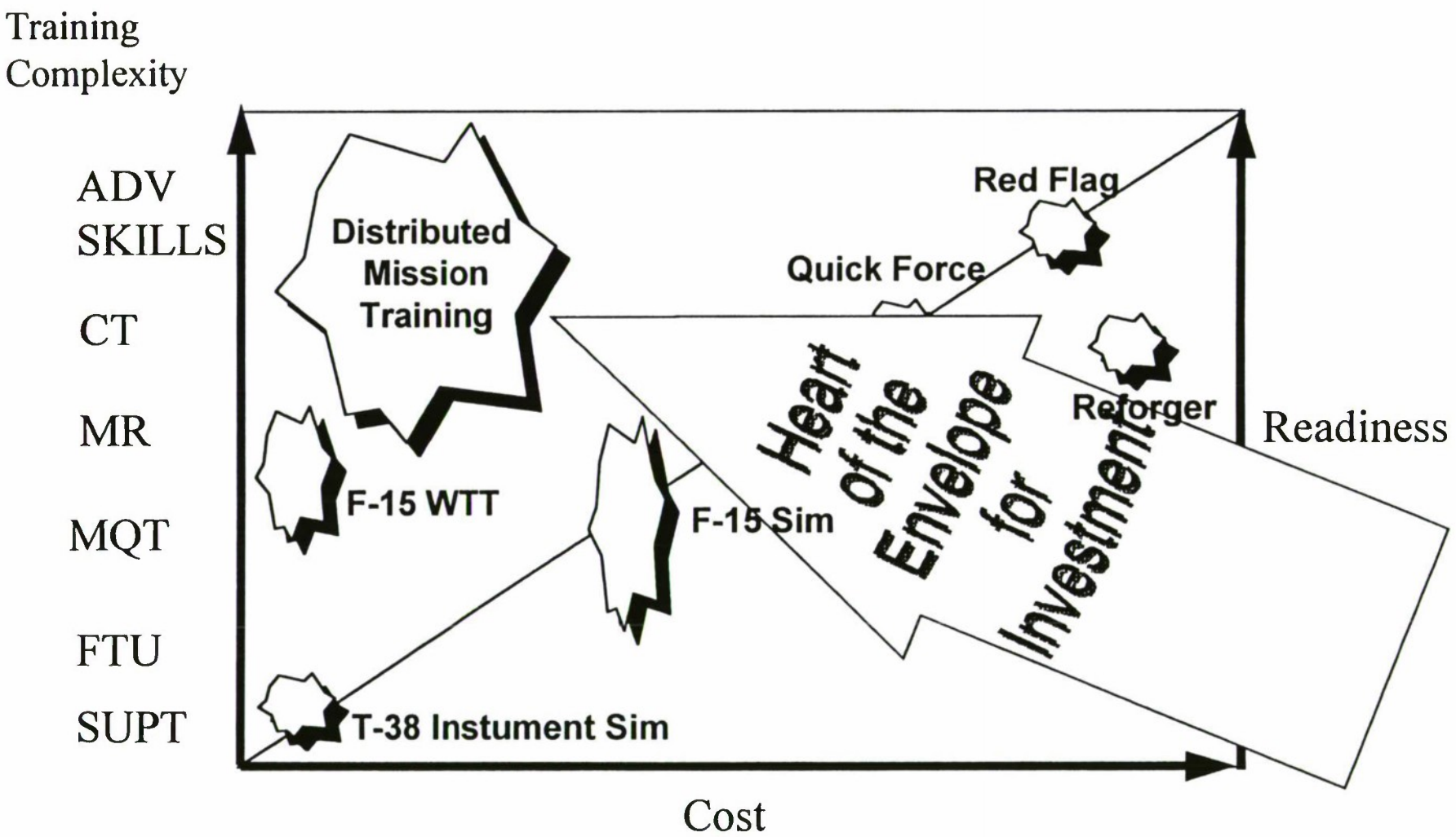

- Not Applicable
- Supported by Simulation
- Partially Supported by Simulation
- Currently not supported by Simulation



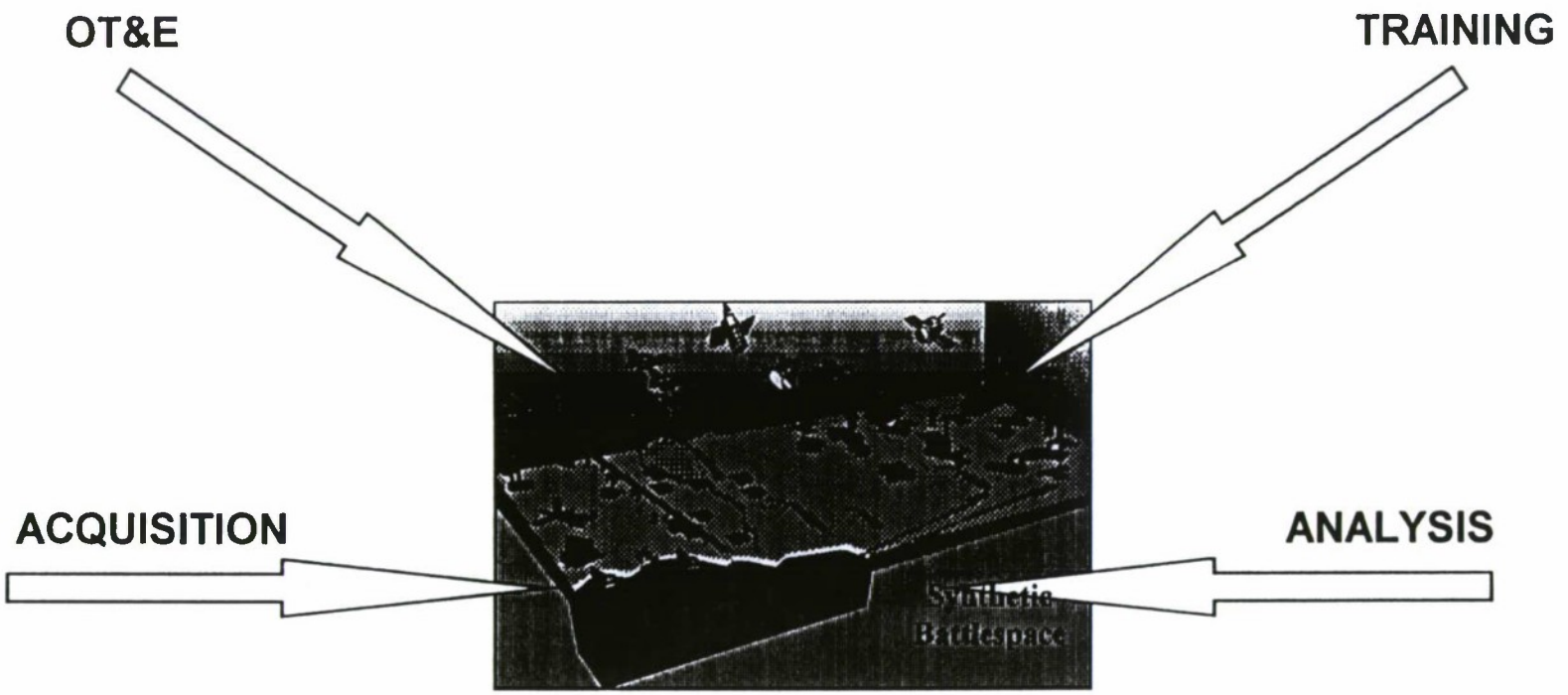
# Combat Proficiency Training



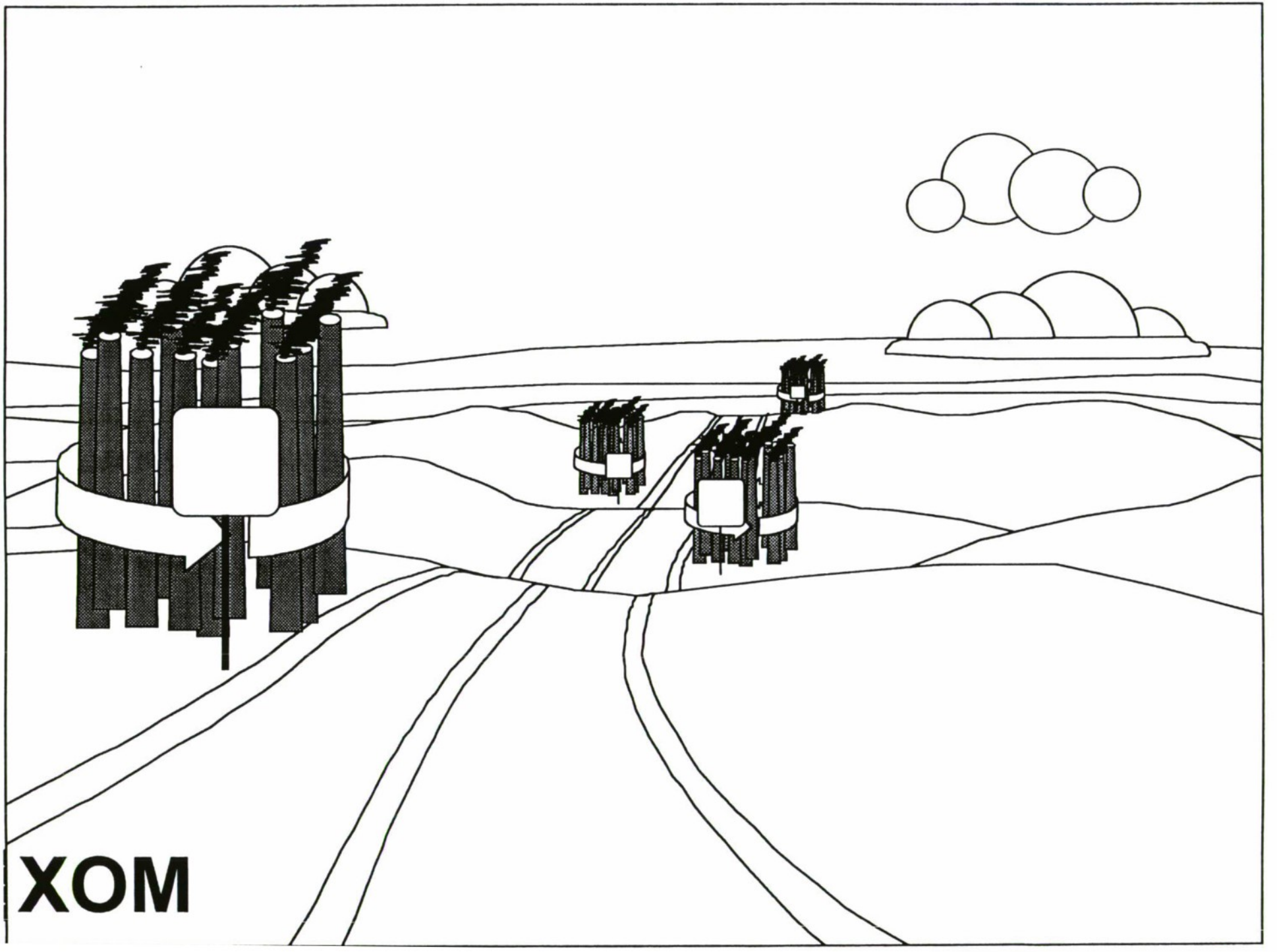
# Combat Proficiency Training



# Joint Synthetic Battlespace

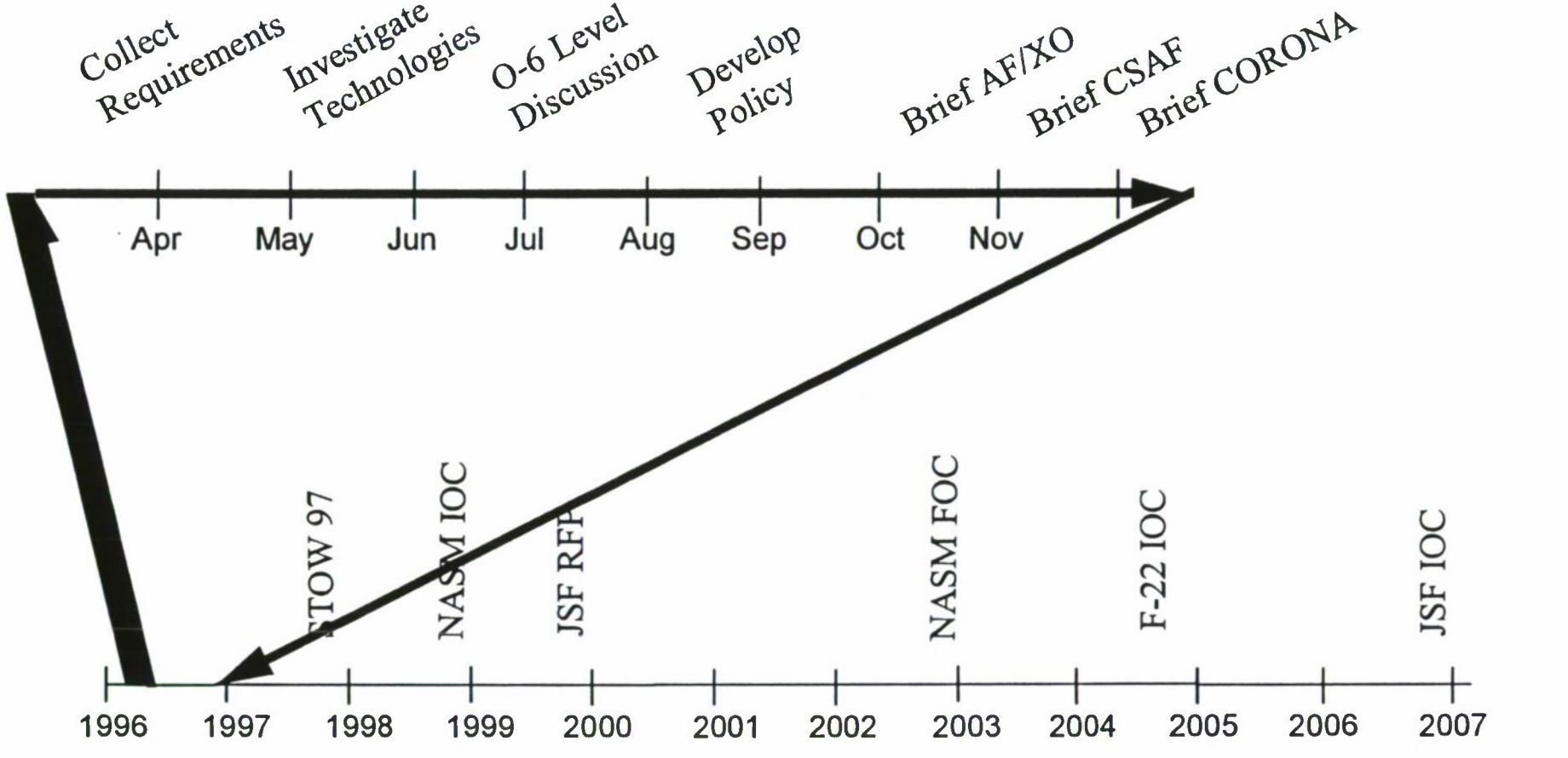



XOM


XOM

# Revolutionizing Training

## Timeline for Action






# Synergy

- Appropriate application of Air and Space Power critical to National Interests
- Impacts on competition for scarce DoD $$
- Decisions on Roles and Missions issues
- Need revolutionary approach to training that integrates acquisition, OT&E, and analysis in the Joint Synthetic Battlespace



# Recommendations

- CSAF charge AF/XOM with the responsibility and authority to:
  - Identify a plan and the processes to revolutionize training
  - Integrate the M&S in acquisition, OT&E, and analysis to develop a roadmap to the JSB



# A Path to Revolutionary Training

Advance Planning Briefing to Industry — Orlando FL 1 May 1996

Presentation not available at Press Time

# Combat Air Forces Simulation and Training Requirements

Advance Planning Briefing to Industry — Orlando FL 1 May 1996

Presentation not available at Press Time

# Air Education and Training Command Requirements

Advance Planning Briefing to Industry | Orlando FL 1 May 1996

Presentation not available at Press Time

# Air Mobility Command

| Advance Planning Briefing to Industry | Orlando FL 1 May 96 |
|---|---|




Lt Col Rich Peterson
AMC/DOT

# AMC Simulation & Training



"I want to eliminate all non-revenue generating flying training."

➤ Gen Ronald Fogleman Oct '92

# AMC Trainer Inventory



| Weapon Sys | Type | Quantity |
|---|---|---|
| C-5 | WST | 7 |
| C-5 | CPT | 4 |
| C-17 | WST | 4 |
| C-17 | CSS | 1 |
| C-17 | LMPTT | 1 |
| C-141 | WST | 6 |
| C-141 | OFT | 2 |
| C-141 | CPT | 7 |

# AMC Trainer Inventory (cont)



| Weapon Sys | Type | Quantity |
|---|---|---|
| C-5/C-141 | ARPTT | 7 |
| KC-10 | WST | 4 |
| KC-10 | CPT | 3 |
| KC-10 | BOPTT | 3 |
| KC-135 | OFT | 19 |
| WC-135 | OFT | 1 |
| KC-135 | BOPTT | 2 |
| | TOTAL | 71 |

# Utilization for Currency



## Percent of Pilot Currency Logged in Trainers

| | Emer | VFR/Inst | AR | Msn |
|---|---|---|---|---|
| **C-5/C-141** | | | | |
| AC | 90 | 0/57 | 33 | 0 |
| FP | 90 | 0/57 | --- | 0 |
| CP | 100 | 0/42 | --- | 0 |
| **C-17** | 100 | 100/80 | 33 | 50 |
| **KC-10** | 100 | 0/28 | 0 | 0 |
| **KC-135** | | | | |
| AC | 90 | 0 | 0 | 0 |
| CP | 100 | 0 | --- | --- |

# Simulator Upgrade Program

Advance Planning Briefing to Industry — Orlando FL 1 May 96

Training Need

Ability to perform VFR and mission tasks except in aircraft

Training Shortfall

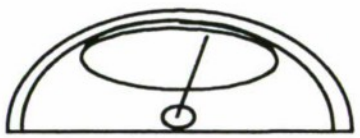
Training device fidelity not adequate for task

Proposed Solutions

Upgrade simulators and other trainers, acquire additional devices where appropriate

Program Assessment

$\$250M \leq x \leq \$330M$



Reality Meter

# AMC Upgrade Standard



## AMC -- FAA Level-C (Plus Enhanced Visual Systems)

**Reduce Risk Of Trading Aircraft Flying Hours**

- Regardless Of AMC Experience Levels

**Continuation & Refresher Training**

- Pilots Log Credit For Airline-Type Events
- Compensate For Low-Time Monthly Average

**Address Airlift & Tanker Mission Training**

- Air Refueling & Formation

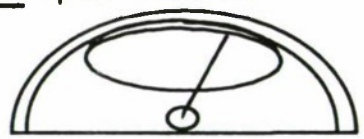
# Near Term Summary
## (1-2 yrs out)



- Projected Schedule:




- Type Award Anticipated: FFP
- Requirement Document: CMNS
- Program Size: $240M ≤ x ≤ $340M
- Funding Status/Stability:



Reality Meter

# Near Term Program Summary

## (1-2 yrs out)



- Deliverables: 30 Visual IGs
  29 Displays
  22 Computer Systems
  17 Motion Bases
  Upgraded Aero
  Misc
- Contact Info
  - **AMC, Lt Col Letica, Phone (618) 256-5696**

# Upgrade Flow Plan



| | FY94 | FY95 | FY96 | FY97 | FY98 | FY99 | FY00 | FY01 | FY02 | FY03 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Aero Data** | [Contract] | | | | | | | | | |
| | | [Level C (2)] | | | | | | | | |
| | | | [Air Refuel (5)] | | | | | | | |
| | | | | [ Integrate (37)] | | | | | | |
| **Visual Sys** | | [ C-5 (7) ] | | | | | | | | |
| | | | [KC-135 (4)] | | | | | | | |
| | | | | | [KC-10 (4) ] | | | | | |
| | | | | | | | [KC-135(6)][KC-135(9)] | | | |
| **Motion Sys** | | [KC-135 (2)] | | | | [KC-135 (15)] | | | | |
| **Computer Rehost** | | [C-5 (12)] | | | | | | | | |
| | | | [KC-135 (20)] | | | | | | | |

# Utilization for Currency



## Future Pilot Currency Logged in Trainers

| | Emer | VFR/Inst | AR | Msn |
|---|---|---|---|---|
| **C-5/C-141** | | | | |
| AC | 100 | 50/57 | 50 | 50 |
| FP | 100 | 50/57 | --- | 50 |
| CP | 100 | 50/42 | --- | 50 |
| **C-17** | 100 | 100/80 | 66 | 50 |
| **KC-10** | 100 | 50/50 | 50 | 50 |
| **KC-135** | | | | |
| AC | 100 | 50/50 | 50 | 50 |
| CP | 100 | 50/50 | --- | --- |

# Flying Hour Reductions



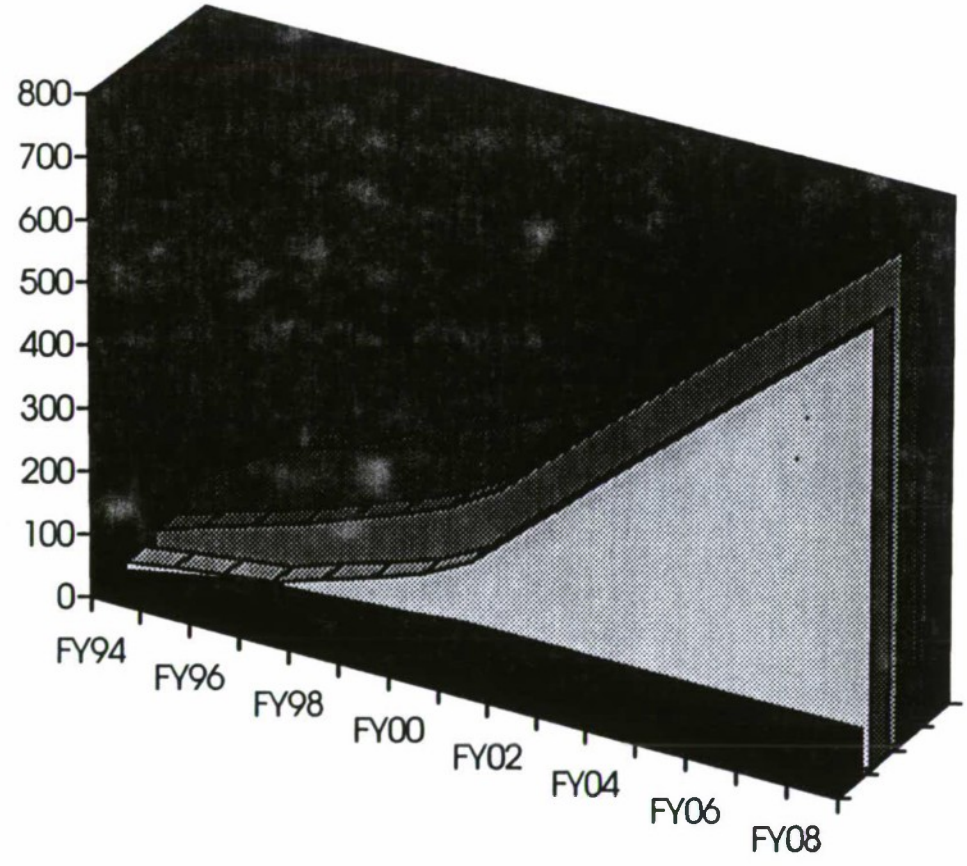
## Completion Of Active-Duty Upgrades in FY02

| Aircraft | Fly Hrs/Year | $M Per Year |
|---|---|---|
| C-141 | 1223* | 4.1* |
| * Average C-141 Hours & Savings (FY97-01) | | |
| C-5 | 908 | 6.5 |
| KC-10 | 3301 | 13.5 |
| KC-135 | 5621 | 12.3 |
| TOTALS | 8750 | 32.3 |

**Flying Hour Program Reduced By $32.3M Per Year**

# Cost vs Savings

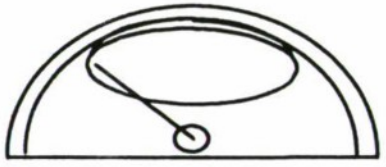




# Long Term Program Summary
## (3-5+ yrs out)



- Projected Schedule: FY 05
- Requirement Document: AMMP
- Projected Program Size: ? $\leq$ $40M
- Funding Status/Stability:



- POCs:
  - **AMC, Lt Col Letica, Phone (618) 256-5696**

# Future Needs



Training Need

Ability to interact with other trainers/players

Training Shortfall

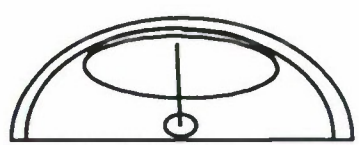
Current devices support only ownship training

Proposed Solutions

Networked trainer capability

Program Assessment

$\$5M \leq x \leq \$20M$



Reality Meter

# Future Needs



Training Need

Ability to train other crew positions outside of aircraft

Training Shortfall

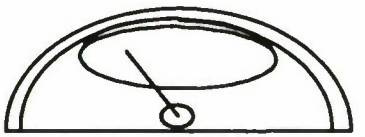
Current training requires aircraft. Inability to train emergencies

Proposed Solutions

Virtual reality trainers

Program Assessment

$\$5M \leq x \leq \$20M$



Reality Meter

AMERICA'S SPECIALIZED AIR POWER



A STEP AHEAD IN A CHANGING WORLD

# DOD ADVANCE PLANNING BRIEF FOR INDUSTRY

1 May 1996

Simulation and Training Requirements

Col Philip E. Glenn
Chief, Operations Training

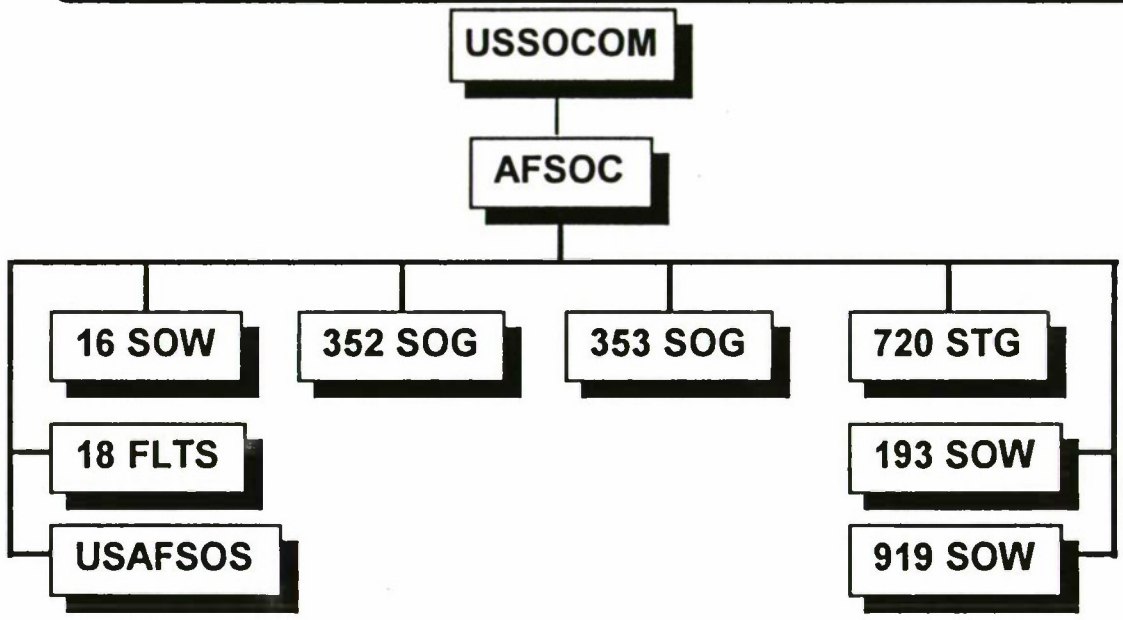


# *OVERVIEW*

- COMMAND MISSION
- TRAINING STRATEGY & FACILITIES
- COMMAND VISION
- INDUSTRY OPPORTUNITIES
- REQUIREMENTS PROCESS

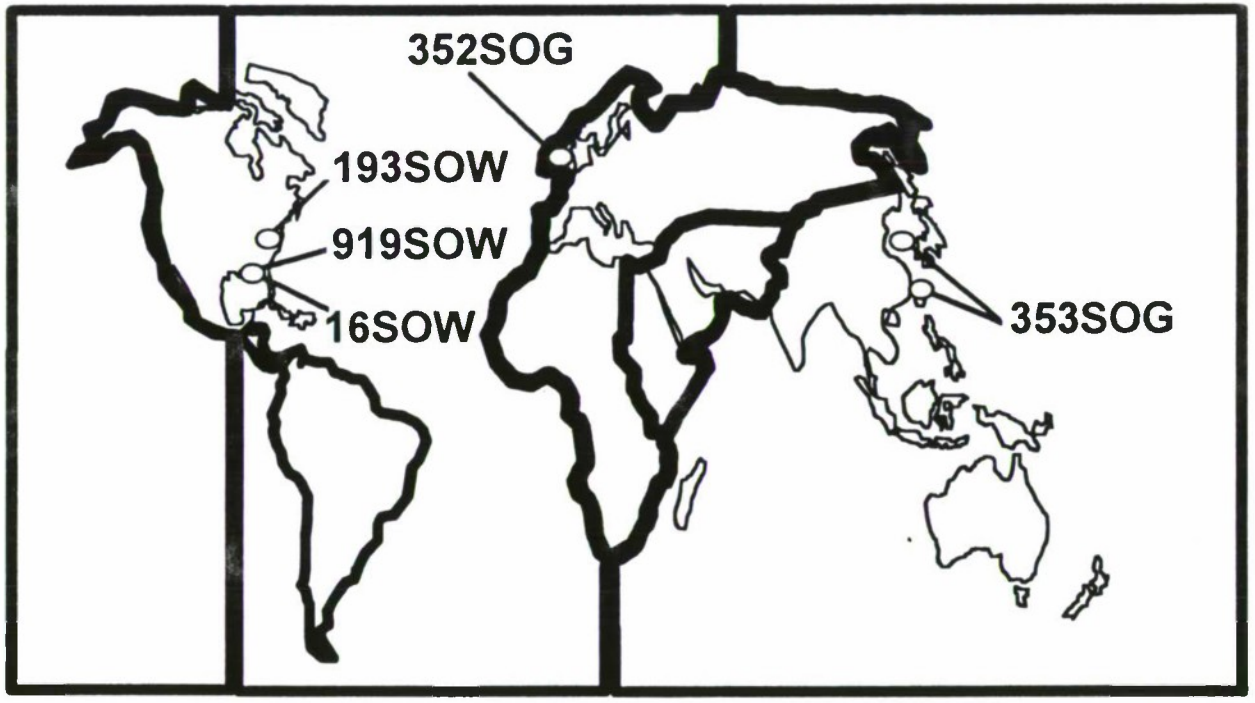


# *AIR FORCE SPECIAL OPERATIONS COMMAND*






# AFSOC UNITS AND AREAS OF RESPONSIBILITY




16 SOW

CENTRAL COMMAND

ATLANTIC COMMAND

SOUTHERN COMMAND

352 SOG

EUROPEAN COMMAND

353 SOG

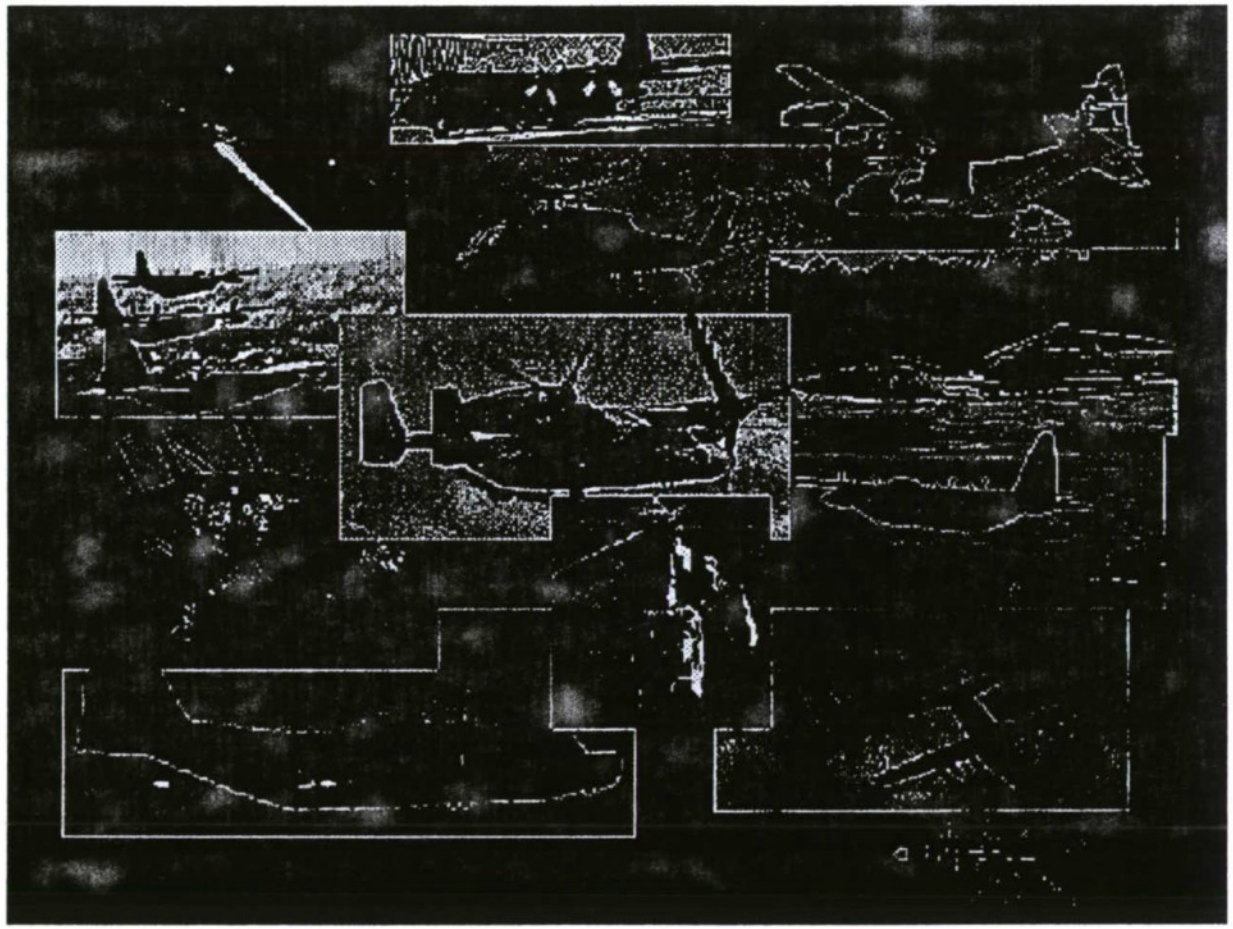
PACIFIC COMMAND

# *STRENGTH*

| | UNITS | PEOPLE |
|---|---|---|
| **ACTIVE DUTY** | | |
| CONUS | 42 | 7910 |
| OVERSEAS | 14 | 1833 |
| TOTAL ACTIVE DUTY | 56 | 9743 |
| **AIR RESERVE COMPONENTS** | | |
| RESERVES | 14 | 1383 |
| NATIONAL GUARD | 15 | 1037 |
| TOTAL ARC | 29 | 2420 |
| TOTAL REPORTING TO AFSOC | 85 | 12163 |



# *AFSOC AIRCRAFT*



# AFSOC AIRCRAFT LOCATIONS

## 16 SOW

**EGLIN**

| | |
|---|---|
| MC-130P | 8 |

**HURLBURT**

| | |
|---|---|
| AC-130H | 7 |
| AC-130U | 10 |
| MC-130E | 6 |
| MC-130H | 10 |
| MH-53 | 19 |
| MH-60 | 8 |
| C-130E | 2 |

## 352 SOG

**MILDENHALL**

| | |
|---|---|
| MC-130H | 4 |
| MC-130P | 4 |
| MH-53 | 5 |
| C-130E | 1 |

## 353 SOG

**OSAN**

| | |
|---|---|
| MH-53 | 5 |

**KADENA**

| | |
|---|---|
| MC-130H | 4 |
| MC-130P | 4 |
| C-130E | 1 |

PRIMARY AUTHORIZED AIRCRAFT ON 1 OCT 95

# AFSOC AIRCRAFT LOCATIONS
# AIR RESERVE COMPONENTS

| 193 SOW<br>PA ANG | 919 SOW<br>AFRES |
|---|---|
| HARRISBURG, PA | DUKE FIELD, FL |
| EC-130E 3* | MC-130P 4 |
| C-130H 2 | MC-130E 6 |
| | C-130E 2 |
| | C-130H 1 |

PRIMARY AUTHORIZED AIRCRAFT ON 1 OCT 95

3 OF 6 TOTAL EC-130E MODIFIED TO WORLDWIDE COLOR TV STANDARD. REMAINING 3 TO BE MODIFIED BY FY98



## *PRINCIPAL SPECIAL OPERATIONS MISSIONS*

PEACE ⟷ WAR

**DIRECT ACTION (DA)**
**SPECIAL RECONNAISSANCE (SR)**
**UNCONVENTIONAL WARFARE (UW)**

**FOREIGN INTERNAL DEFENSE (FID)**
**COMBATTING TERRORISM (CT)**
**COUNTERPROLIFERATION OF WEAPONS OF MASS DESTRUCTION (WMD)**

**PSYCHOLOGICAL OPERATIONS**
**CIVIL AFFAIRS**



## *COLLATERAL SPECIAL OPERATIONS ACTIVITIES*

PEACE ⟷ WAR

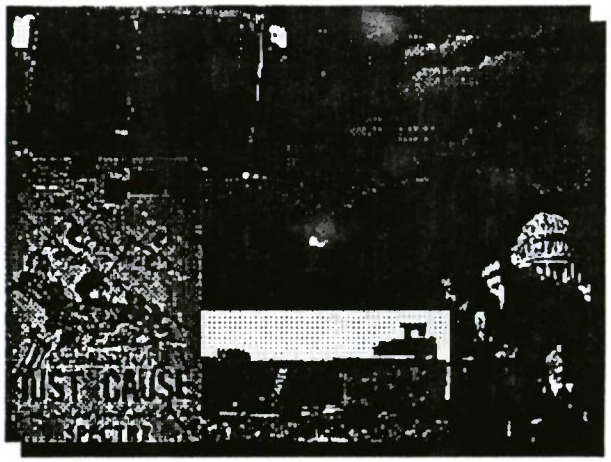
**HUMANITARIAN ASSISTANCE**
**PERSONNEL RECOVERY (SAR/CSAR)**
**SPECIAL ACTIVITIES**

**COALITION SUPPORT**

**SECURITY ASSISTANCE**
**COUNTERDRUG**
**PEACE OPERATIONS**



# RECENT AND CURRENT OPERATIONS




- 1989 - JUST CAUSE - PANAMA
- 1990 - DESERT SHIELD/STORM - KUWAIT
- 1991 - PROVIDE COMFORT - IRAQ
- 1992 - RESTORE HOPE - SOMALIA
- 1993 - DENY FLIGHT - BOSNIA
- 1993 - PROVIDE PROMISE - BOSNIA
- 1993 - CONTINUE HOPE - SOMALIA
- 1994 - SUPPORT DEMOCRACY - HAITI
- 1994 - SUPPORT HOPE - RWANDA
- 1994 - UPHOLD DEMOCRACY - HAITI
- 1995 - UNITED SHIELD - SOMALIA
- 1995 - JOINT ENDEAVOR - BOSNIA

# SPECIAL OPS

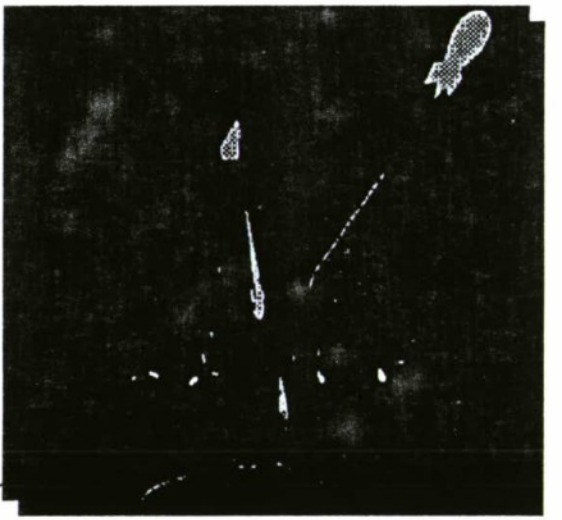
## *The Tip of the Spear...*





## *...the Force of Choice*

# *COMMAND TRAINING STRATEGY*



# *Education and Training Requirements*

- **TECHNICAL**
- **PROFESSIONAL DEVELOPMENT**

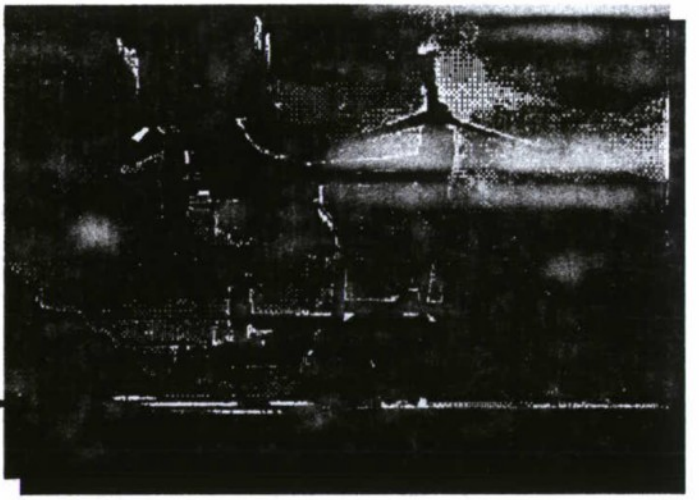


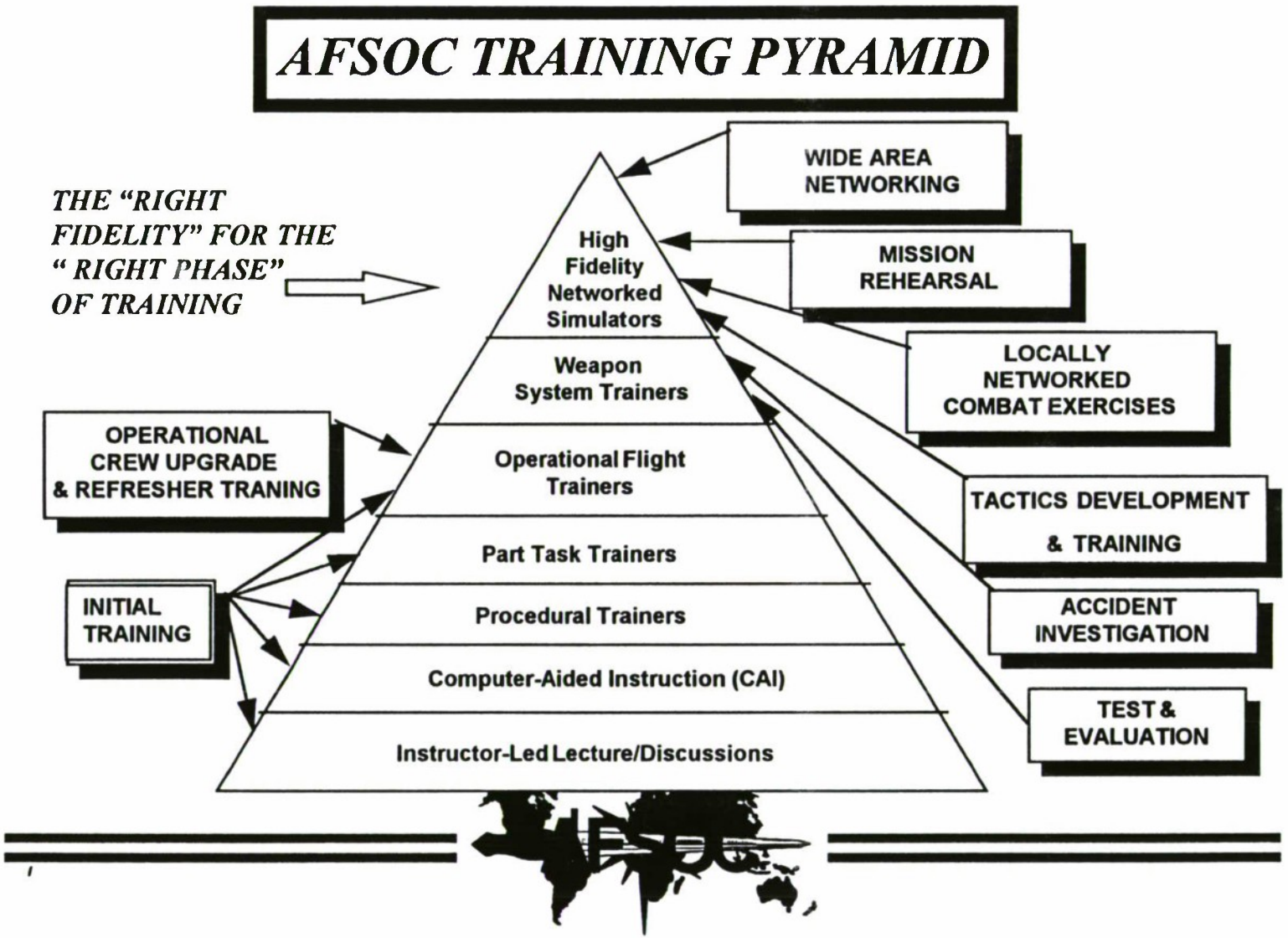
# *Technical Training*

- **AIRCREW**
  - Initial Qualification
  - Initial Mission Qualification
  - Upgrade
  - Refresher
  - Continuation
- **OTHERS**
  - Tech School
  - On-The-Job
  - Continuation

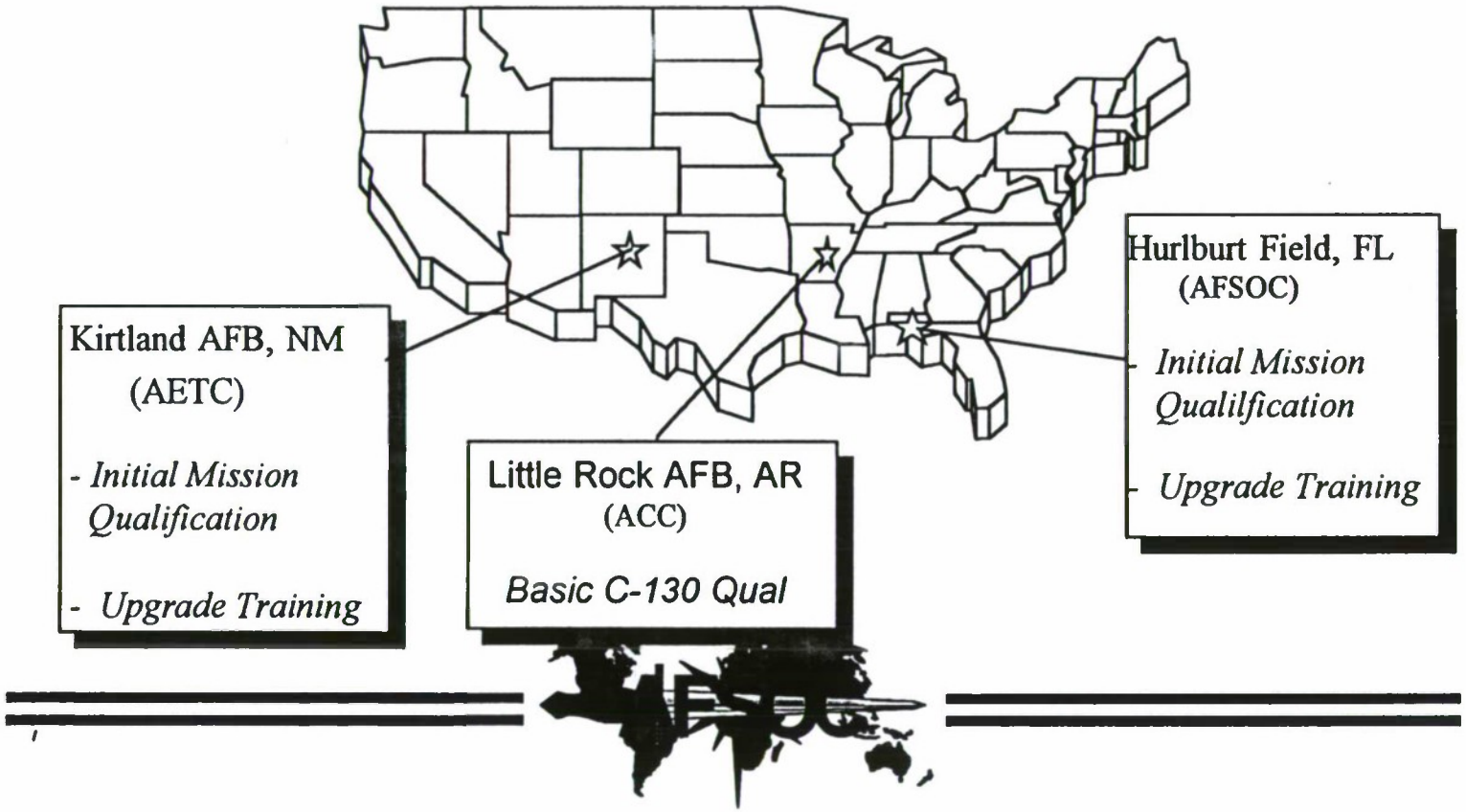


# *AFSOC TECHNICAL TRAINING*

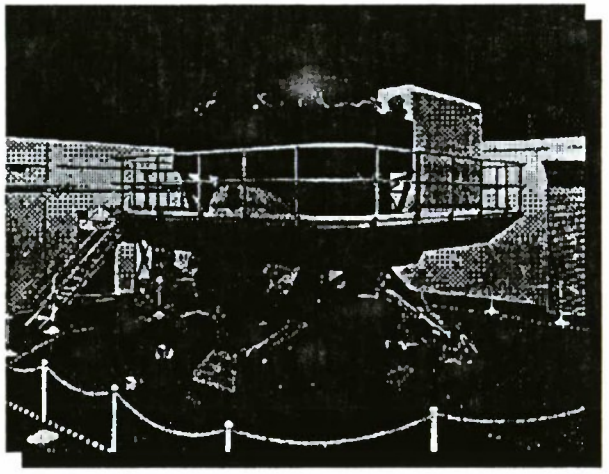



AFSOC TRAINING PYRAMID
THE "RIGHT FIDELITY" FOR THE " RIGHT PHASE" OF TRAINING
WIDE AREA NETWORKING
MISSION REHEARSAL
LOCALLY NETWORKED COMBAT EXERCISES
TACTICS DEVELOPMENT & TRAINING
ACCIDENT INVESTIGATION
TEST & EVALUATION
OPERATIONAL CREW UPGRADE & REFRESHER TRANING
INITIAL TRAINING
High Fidelity Networked Simulators
Weapon System Trainers
Operational Flight Trainers
Part Task Trainers
Procedural Trainers
Computer-Aided Instruction (CAI)
Instructor-Led Lecture/Discussions

# *AFSOC FORMAL TRAINING LOCATIONS*



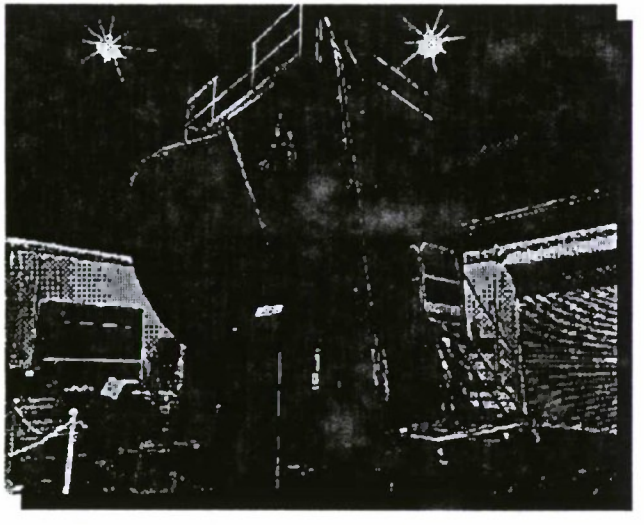
# KIRTLAND TRAINING



MC-130H Weapon System Trainer

- MC-130H Talon II
- MC-130P Combat Shadow
- MH-53J Pave Low
- MH-60G Pave Hawk

# *HURLBURT TRAINING*



MC-130H Mission Rehearsal Device

- MC-130E Talon I
- AC-13OH Spectre
- AC-130U Spectre

# *AFSOC PROFESSIONAL DEVELOPMENT*



# *Professional Development*

## *COMMANDO EDGE*

**EDUCATION + DEVELOPMENT + GROWTH =**

**AN ENHANCED SPECIAL OPERATOR**



# *COMMANDO EDGE*

## ***PURPOSE:***

**DEVELOP A FORCE ABLE TO ARTICULATE ROLES OF SPECIAL OPERATIONS IN JOINT CONVENTIONAL/ UNILATERAL MISSIONS**



# *COMMANDO EDGE*

## *How It Works*

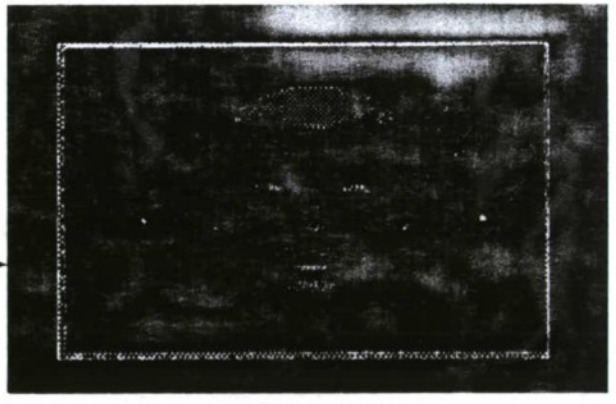
- **PRESCRIBED CURRICULUM**
  - **REQUIRED COURSES/ EXPERIENCE**
  - **ELECTIVES**
- **EXISTING AF PROGRAMS**

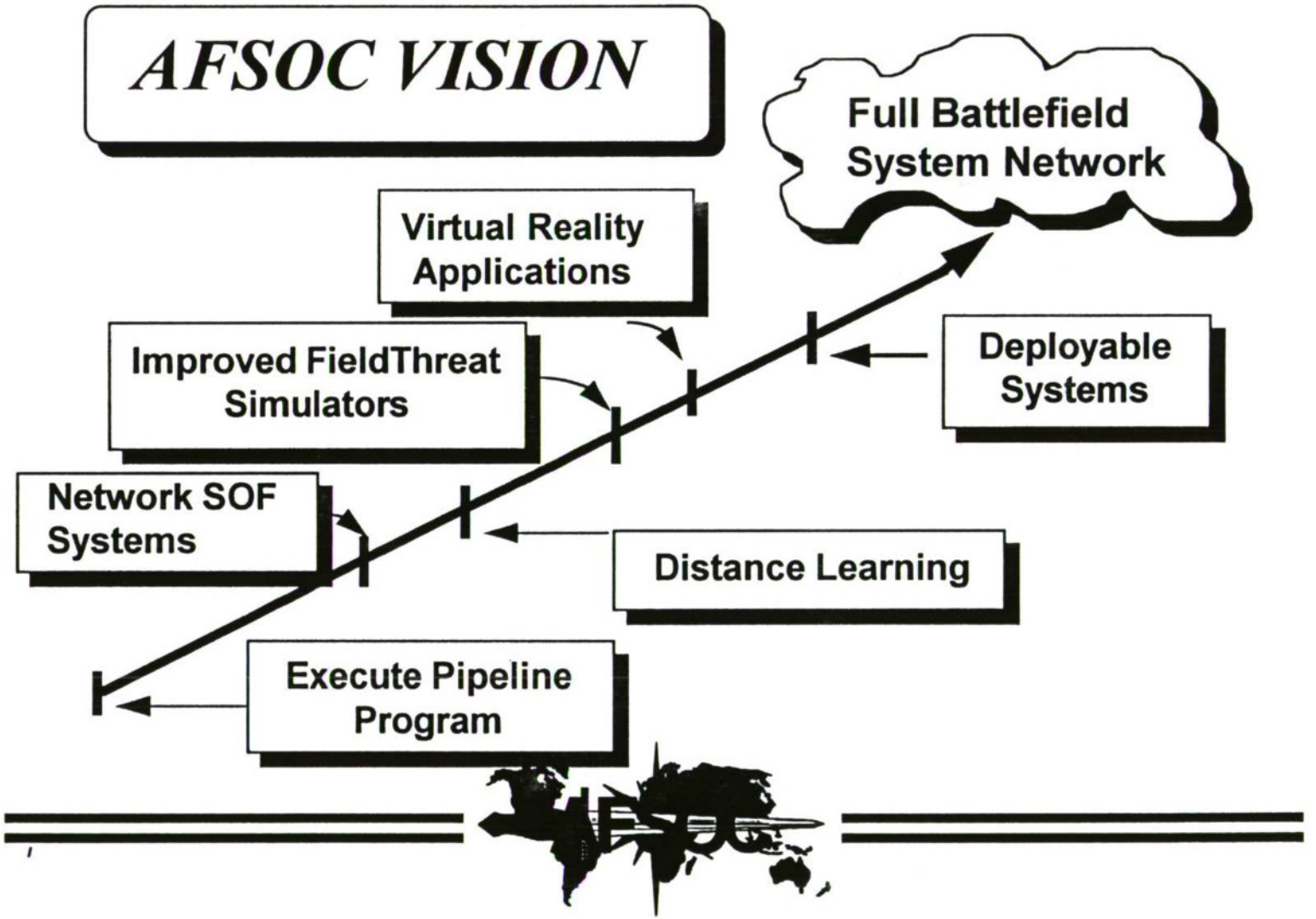


# *COMMANDO EDGE*
## AIRCREW OFFICER EXAMPLE

| | SOS | ACSC | AWC |
|---|---|---|---|
| | LEVEL I | LEVEL I | LEVEL II |
| **PREREQUISITES:**<br>MISSION READY<br>PME FOR GRADE<br>AIR COMMANDO ORIENTATION<br>ISOC | **REQUIRED:**<br>CCC<br>JOINT SOF EX<br>PARTICIPATE IN-<br>BILAT<br>JTX<br>JCS EX<br>**2 ELECTIVES** | **REQUIRED:**<br>LEVEL I<br>PARTICIPATE IN-<br>BILAT<br>JTX<br>JCS EX<br>FIELD EXPERIENCE<br>DIT<br>AFID<br>**2 ELECTIVES** | **REQUIRED:**<br>LEVEL I & II<br>CRM<br>JPOC<br>JOINT EX AS-<br>PLANNER<br>LIAISON<br>MISSION CC<br>**1 ELECTIVE** |

# *COMMAND VISION FOR MODELING AND SIMULATION*




AFSOC VISION
Full Battlefield System Network
Virtual Reality Applications
Improved FieldThreat Simulators
Deployable Systems
Network SOF Systems
Distance Learning
Execute Pipeline Program

# *INDUSTRY*

# *OPPORTUNITIES*



# AC-130H Training

***Training Need***

**AC-130H Menuing Device For Tactical Aircrew**

***Training Shortfall***

**No Part-Task Trainers**

***Proposed Solutions***

**Trainer That Replicates Crew Stations**

***Program Assessment***

**Funding: $1.5M ≤ x ≤ $1.7M**

**Reality Check: Good**



# Maintenance Training

*Training Need*

Off-Aircraft Training

*Training Shortfall*

No Maintenance Training Devices

*Proposed Solutions*

CBT or Artificial Intelligence Tutors

*Program Assessment*

Funding: No Estimate

Reality Check: Average



# AC-130U Training

| *Training Need* | *Training Shortfall* |
| --- | --- |
| AC-130U Aircrew Tng Device | No Weapon System Trainer (WST) |
| ***Proposed Solutions*** | ***Program Assessment*** |
| Acquire WST | Funding: $55M ≤ x ≤ $70M<br><br>Reality Check: Good |



# Virtual Reality

| *Training Need* | *Training Shortfall* |
| --- | --- |
| Part-Task Trainer Devices (PTT) | Unit-Level Training Devices |
| ***Proposed Solutions*** | ***Program Assessment*** |
| Virtual Reality PTT | Funding: No Estimate<br><br>Reality Check: Average |



# Mission Rehearsal

| *Training Need* | *Training Shortfall* |
| --- | --- |
| Deployable Mission Rehearsal Devices (MRD) | No Deployable MRD |
| ***Proposed Solutions*** | ***Program Assessment*** |
| Develop Deployable and Reconfigurable MRD | Funding: No Estimate<br><br>Reality Check: Average |



# Distance Learning

| *Training Need* | *Training Shortfall* |
| --- | --- |
| Ability To Train Widely Dispersed Units | No Distance-Learning Capability |
| ***Proposed Solutions*** | ***Program Assessment*** |
| Acquire Distance Learning Capability | Funding: No Estimate<br><br>Reality Check: Above Average |



# System Networking

*Training Need*

Ability To Network Weapon System Trainers

*Training Shortfall*

Inability To Train Full Mission Scenario

*Proposed Solutions*

Develop System Network

*Program Assessment*

Funding: No Estimate

Reality Check: Above Average



# Threat Simulation

## *Training Need*

**Ability To Simulate Ground Fires Aimed At Aircraft**

## *Training Shortfall*

**Lack of Realistic Training For Full Aircrew Complement**

## *Proposed Solutions*

**Develop Mobile Ground Threat Simulator That Is Scoreable On Aircraft**

## *Program Assessment*

**Funding: No Estimate**

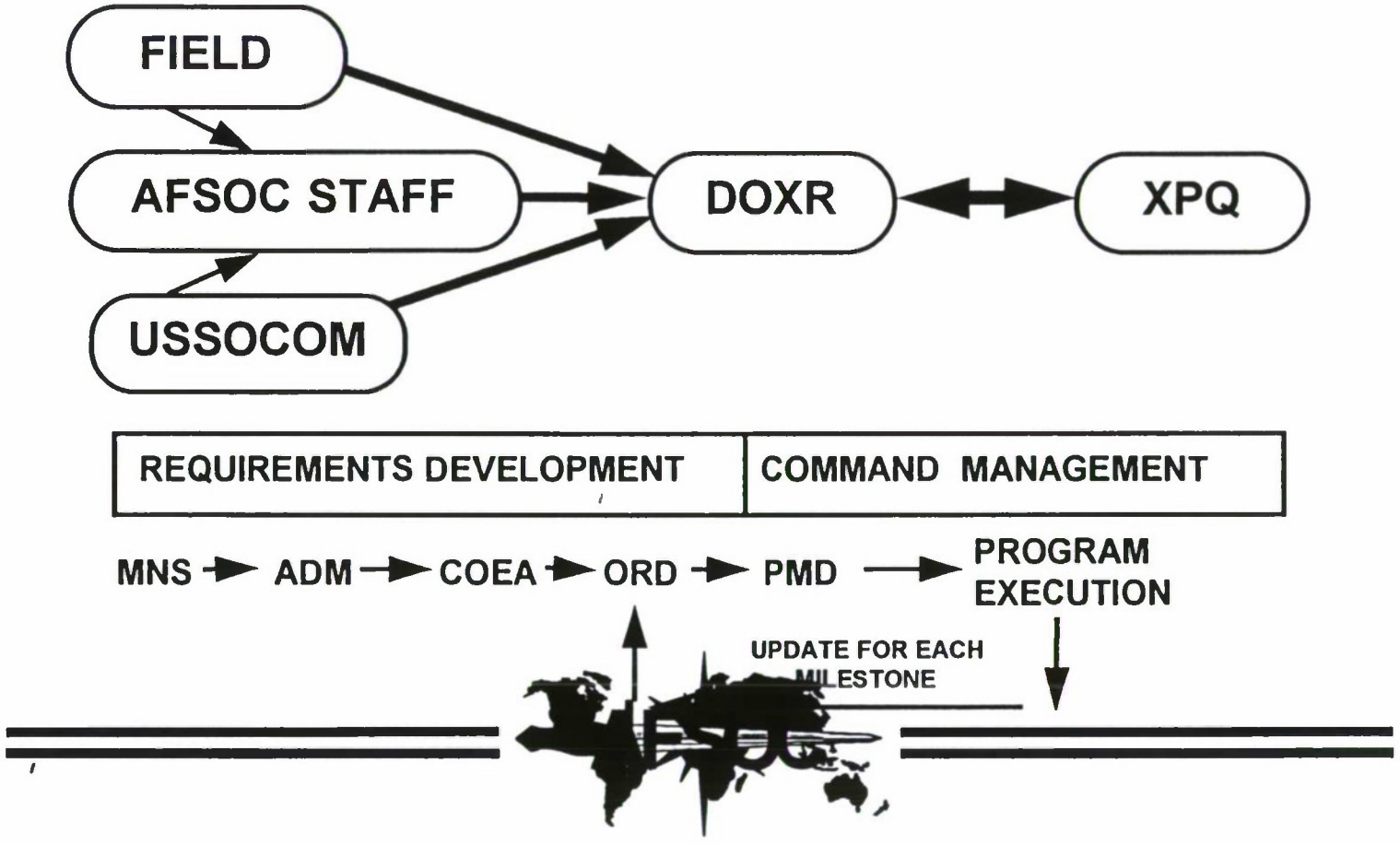
**Reality Check: Average**



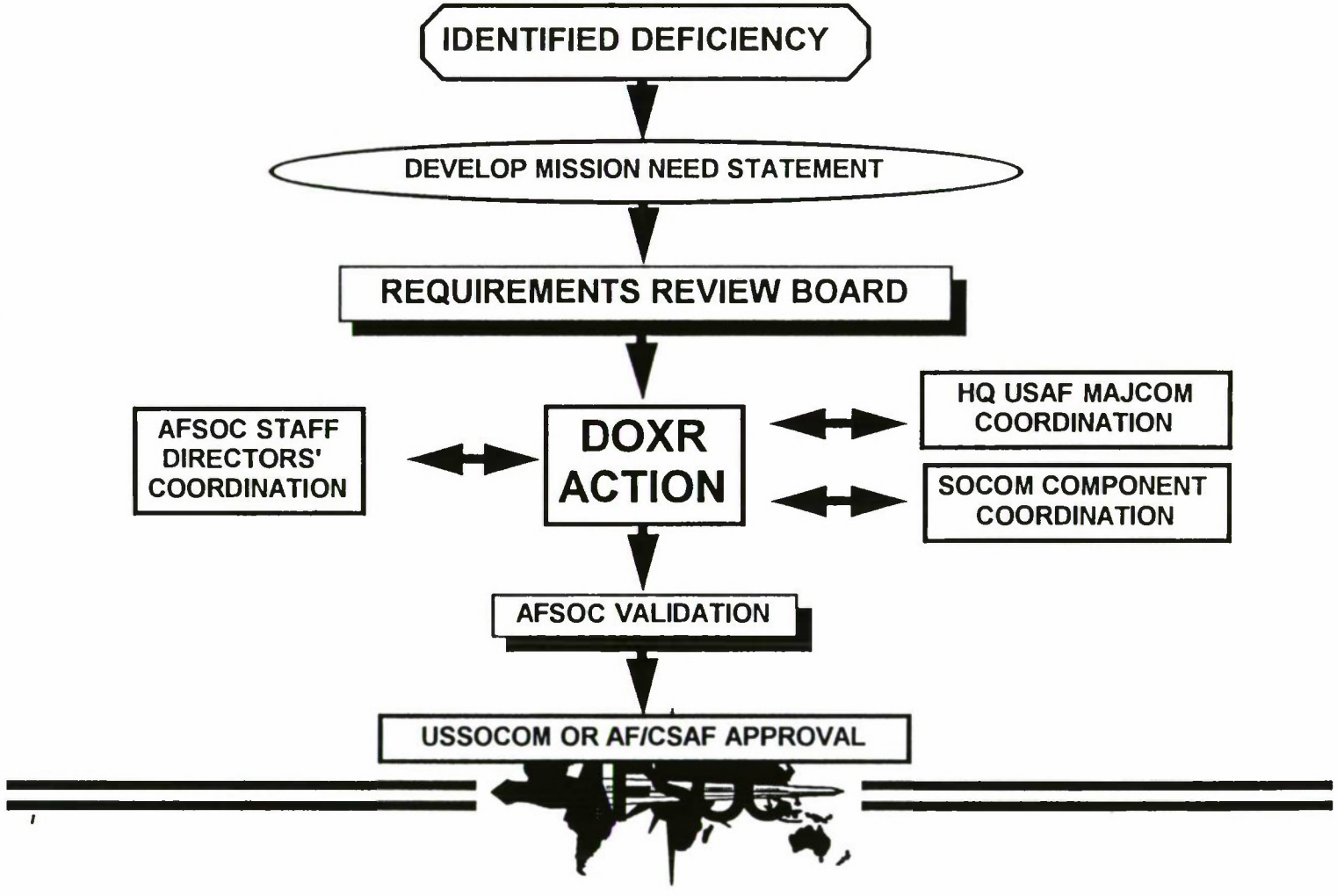
# *AFSOC REQUIREMENTS PROCESSING*



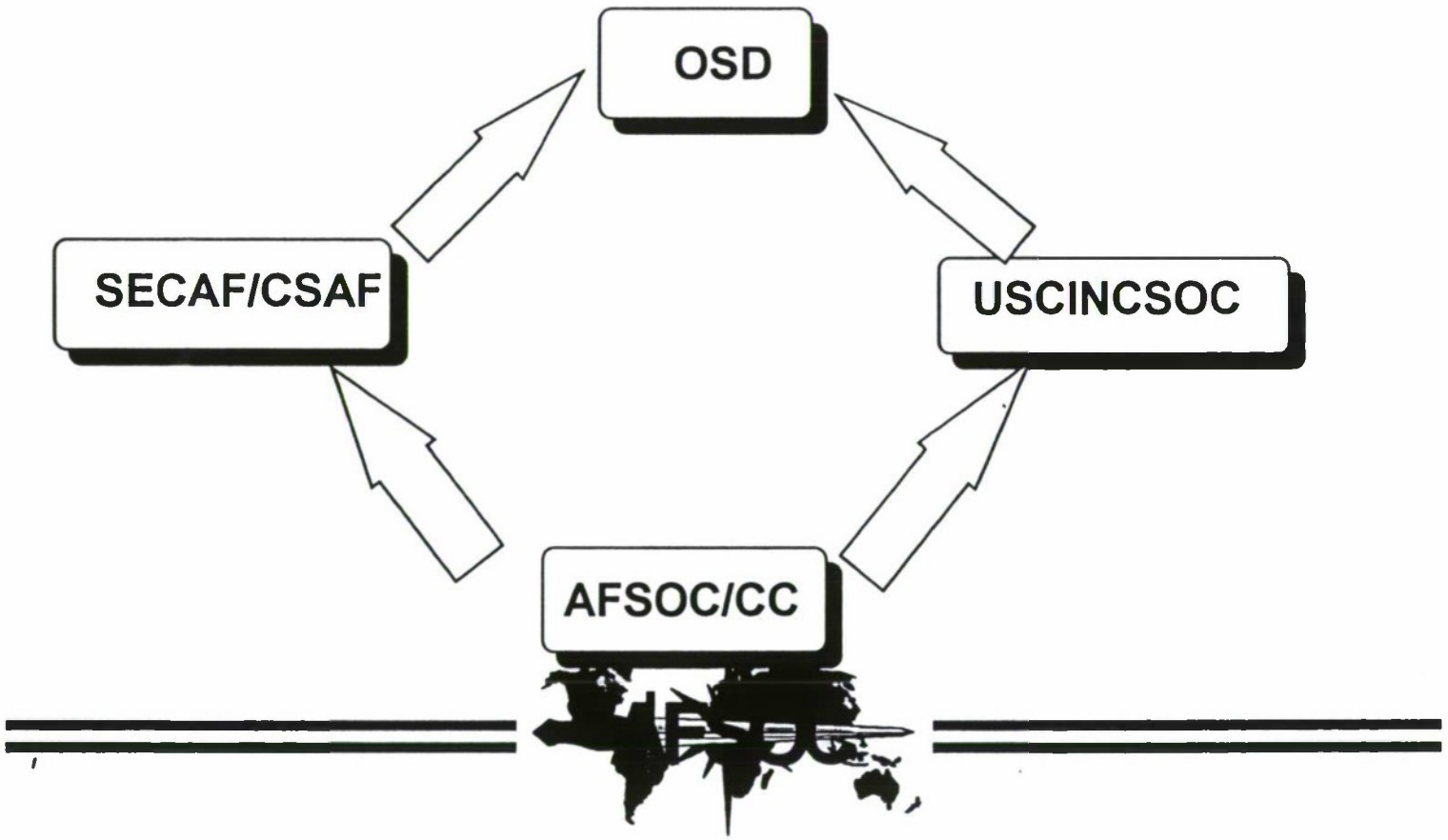
# *REQUIREMENTS FLOW*



# *VALIDATION PROCESS*



# *AFSOC'S DUAL POM PROCESS*



# *Additional Information Points of Contact*

➔ ***Modeling and Simulation:*** **Major Donald**

- **Phone: 904-884-2181**
- **e-mail: dojdonal@hqafsoc.afsoc.mil**

➔ ***Requirements:*** **Lt Col Spence**

- **Phone: 904-884-4077**
- **e-mail: dodspenc@hqafsoc.afsoc.mil**

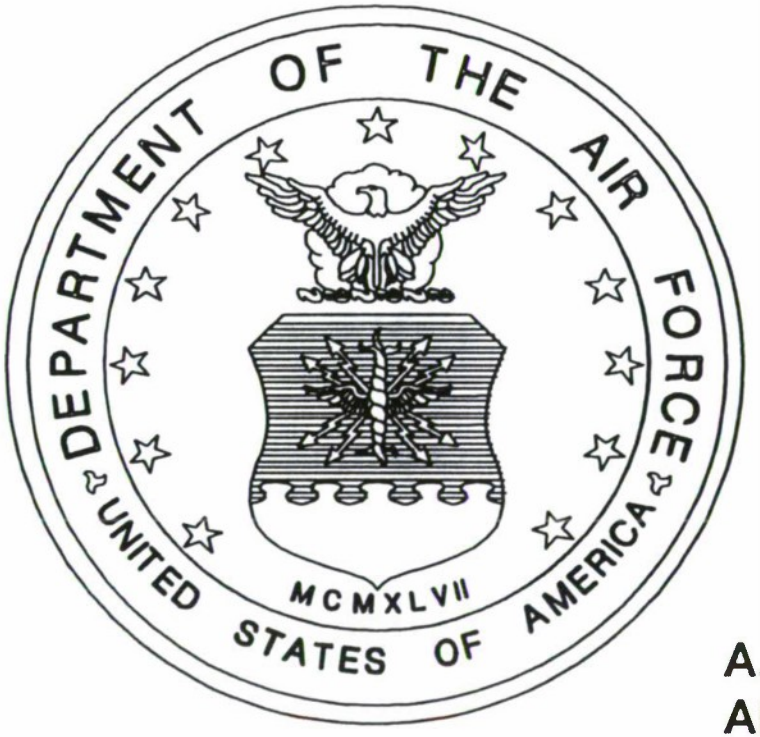


# *AMERICA'S SPECIALIZED AIR POWER*




## A STEP AHEAD IN A CHANGING WORLD

# Modeling and Simulation In Support of Weapons Systems Life cycle T&E Perspective




A. NEIL CHRISTIANSON
AFDTC/DRI
EGLIN AFB FL




# PURPOSE



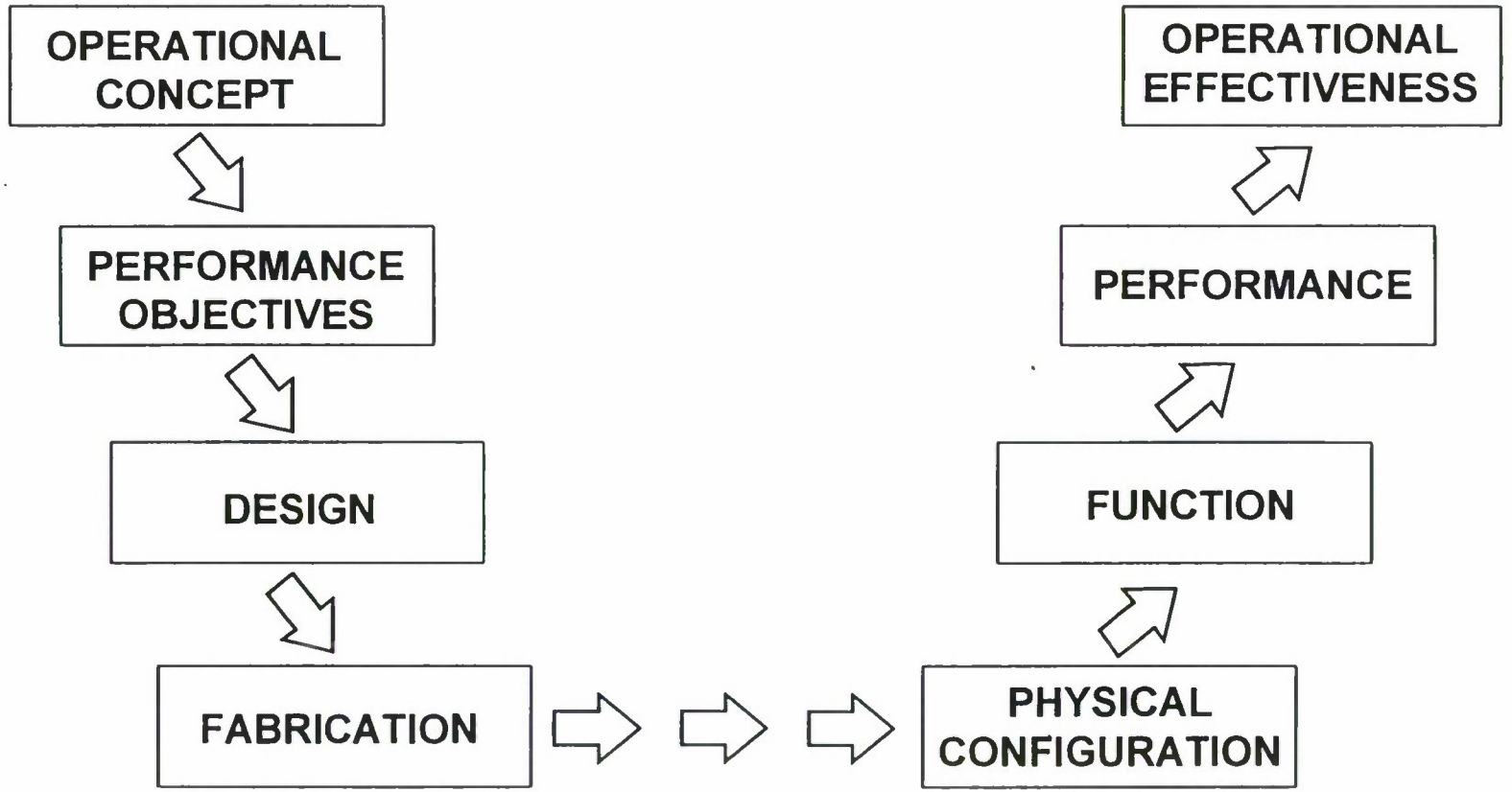
- **PROVIDE A PERSPECTIVE ON THE USE OF MODELING AND SIMULATION TO SUPPORT THE LIFE-CYCLE OF THE MODERN WEAPON SYSTEM**

# OUTLINE

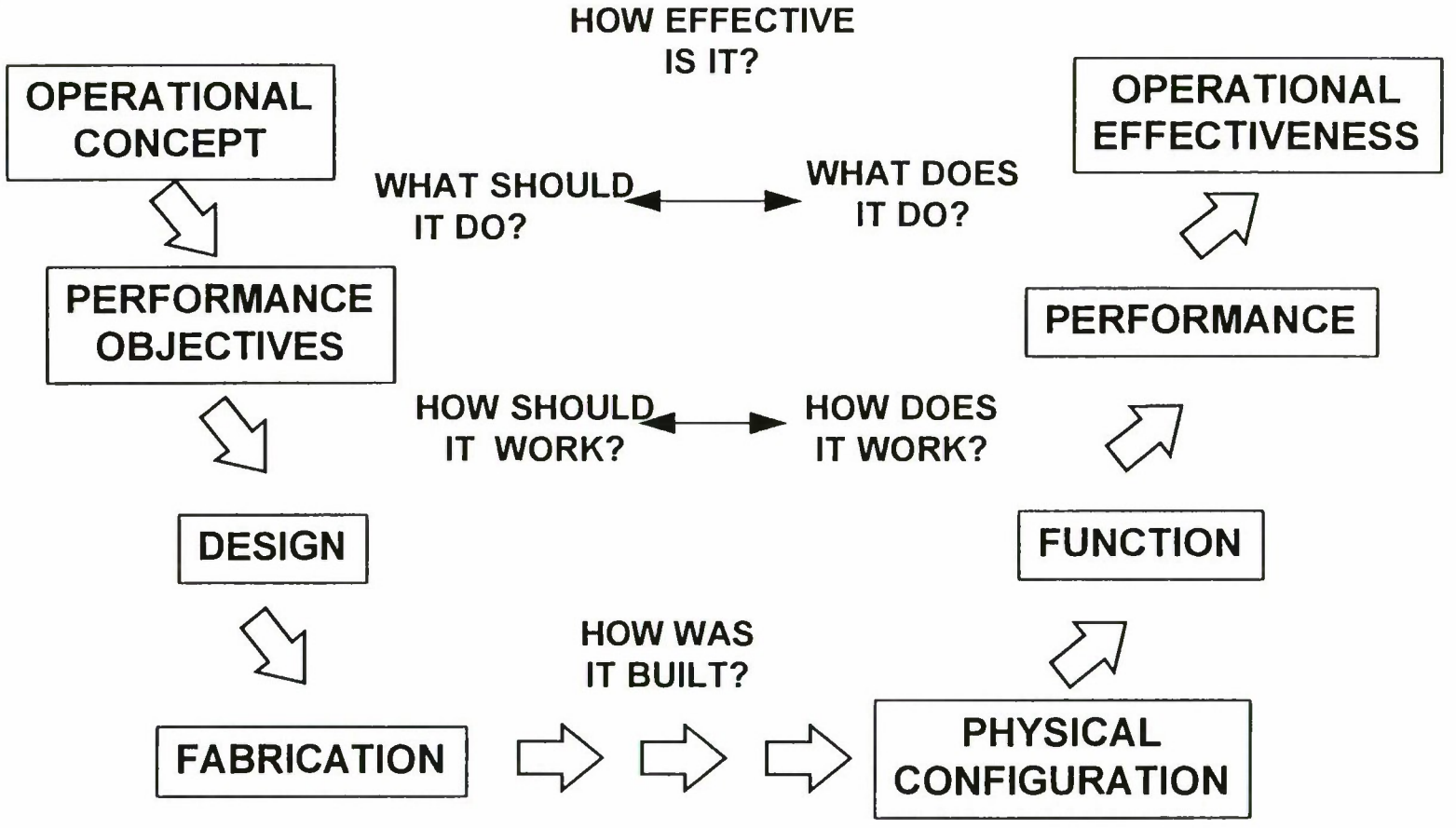
- CONCEPTS OF T&E M/S
- M/S ARCHITECTURE
- M/S APPLICATIONS
- SUMMARY

# Concepts of T&E M/S

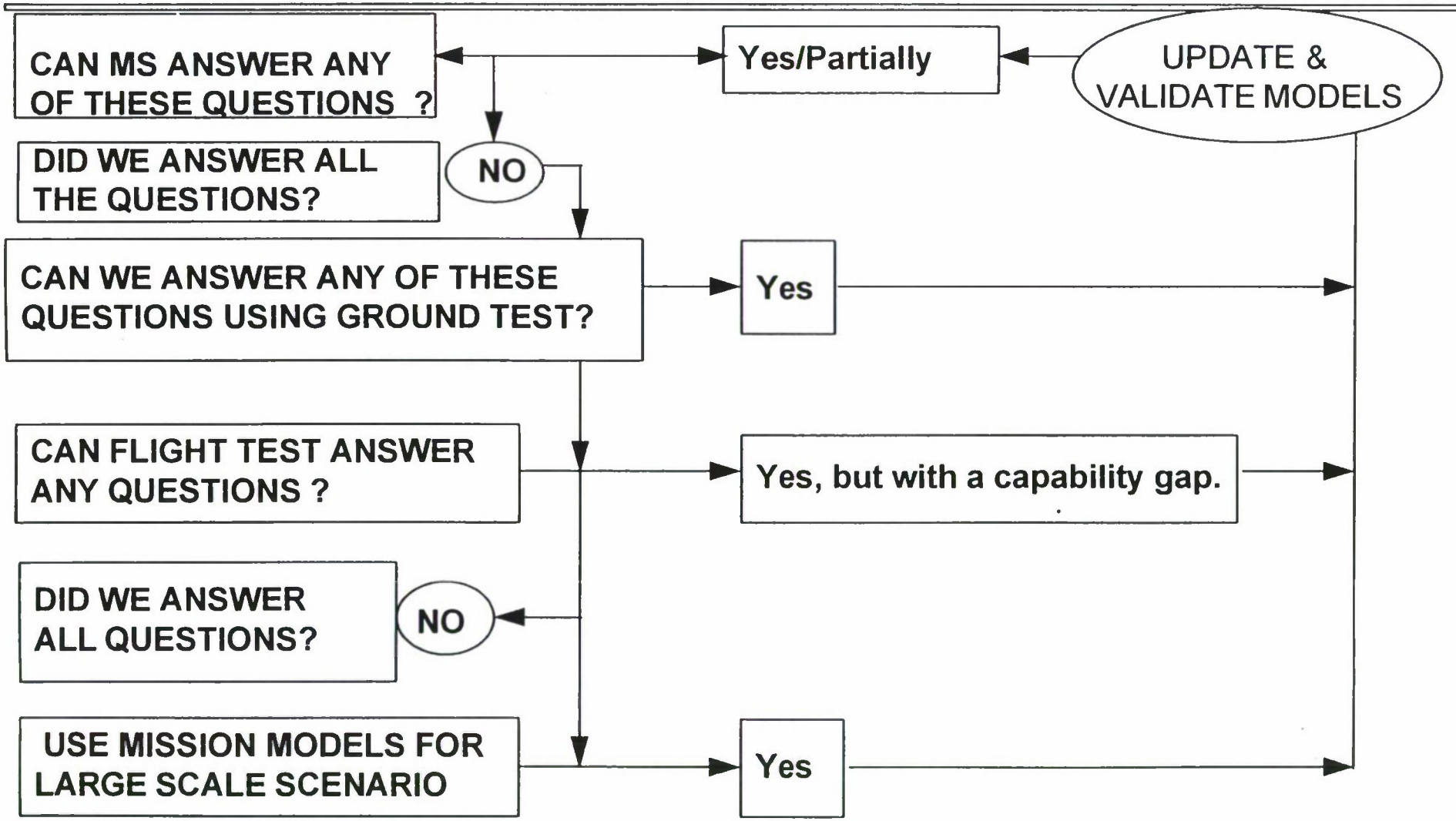
# CONCEPT TO REALITY



# ROLE OF T&E

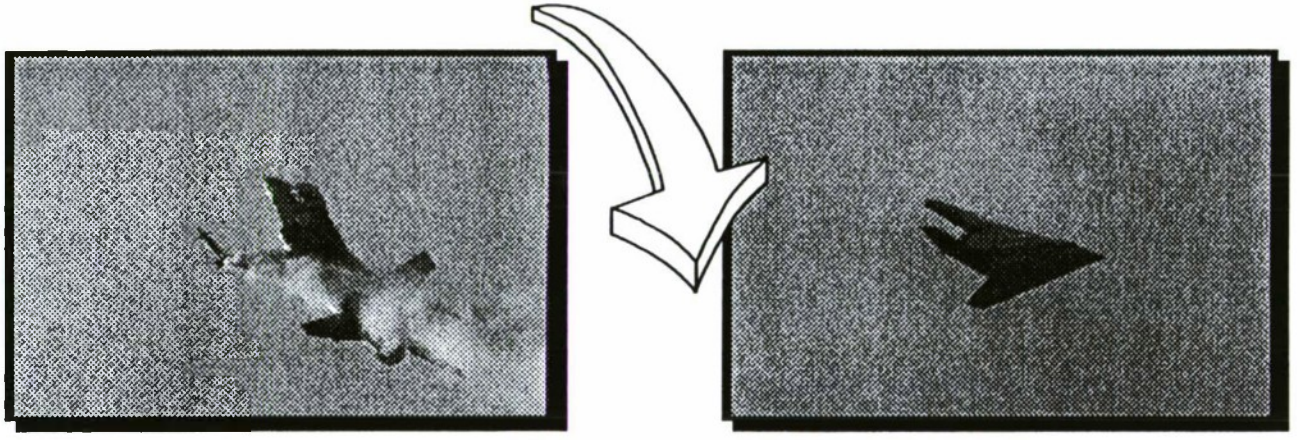

HOW EFFECTIVE IS IT?
OPERATIONAL CONCEPT
OPERATIONAL EFFECTIVENESS
WHAT SHOULD IT DO?
WHAT DOES IT DO?
PERFORMANCE OBJECTIVES
PERFORMANCE
HOW SHOULD IT WORK?
HOW DOES IT WORK?
DESIGN
FUNCTION
HOW WAS IT BUILT?
FABRICATION
PHYSICAL CONFIGURATION

# M/S USE IN WEAPONS TEST METHODOLOGY



# FUNDAMENTAL T&E ROLE

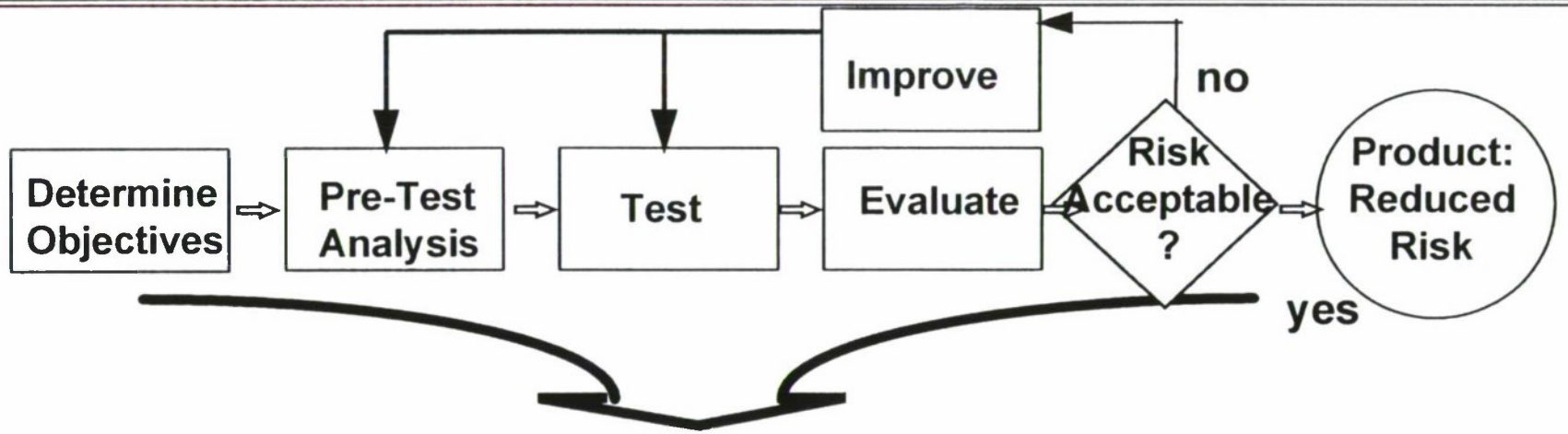
- Provide Accurate and Timely Information To Decision-Makers
- Support the Iterative Development Process (Integral Part Of The SPO-Contractor Team)
- Determine Operational Suitability and Effectiveness

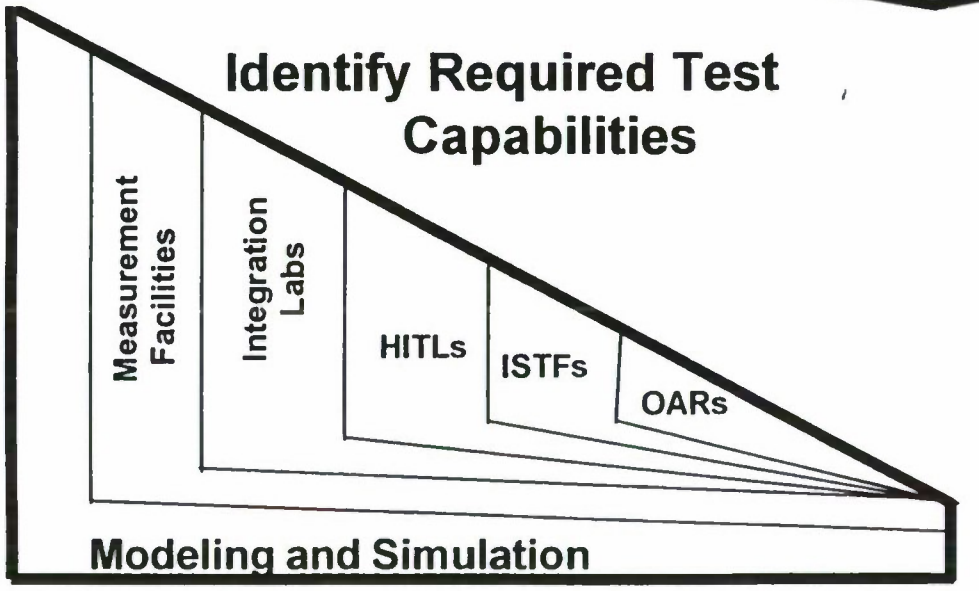


**Ultimately, Warfighter Combat Effectiveness**

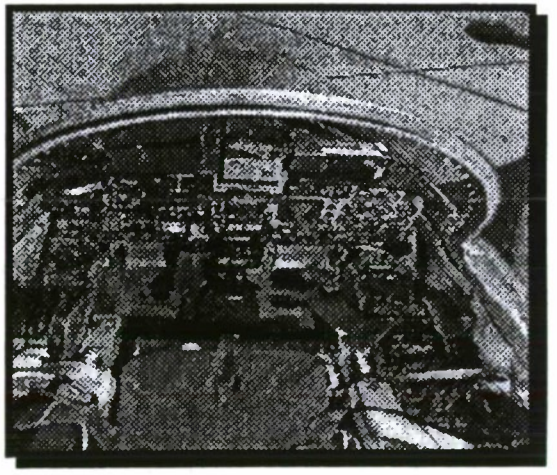
# APPLICATION OF TEST PROCESS METHODOLOGY

## Air Force Test Process



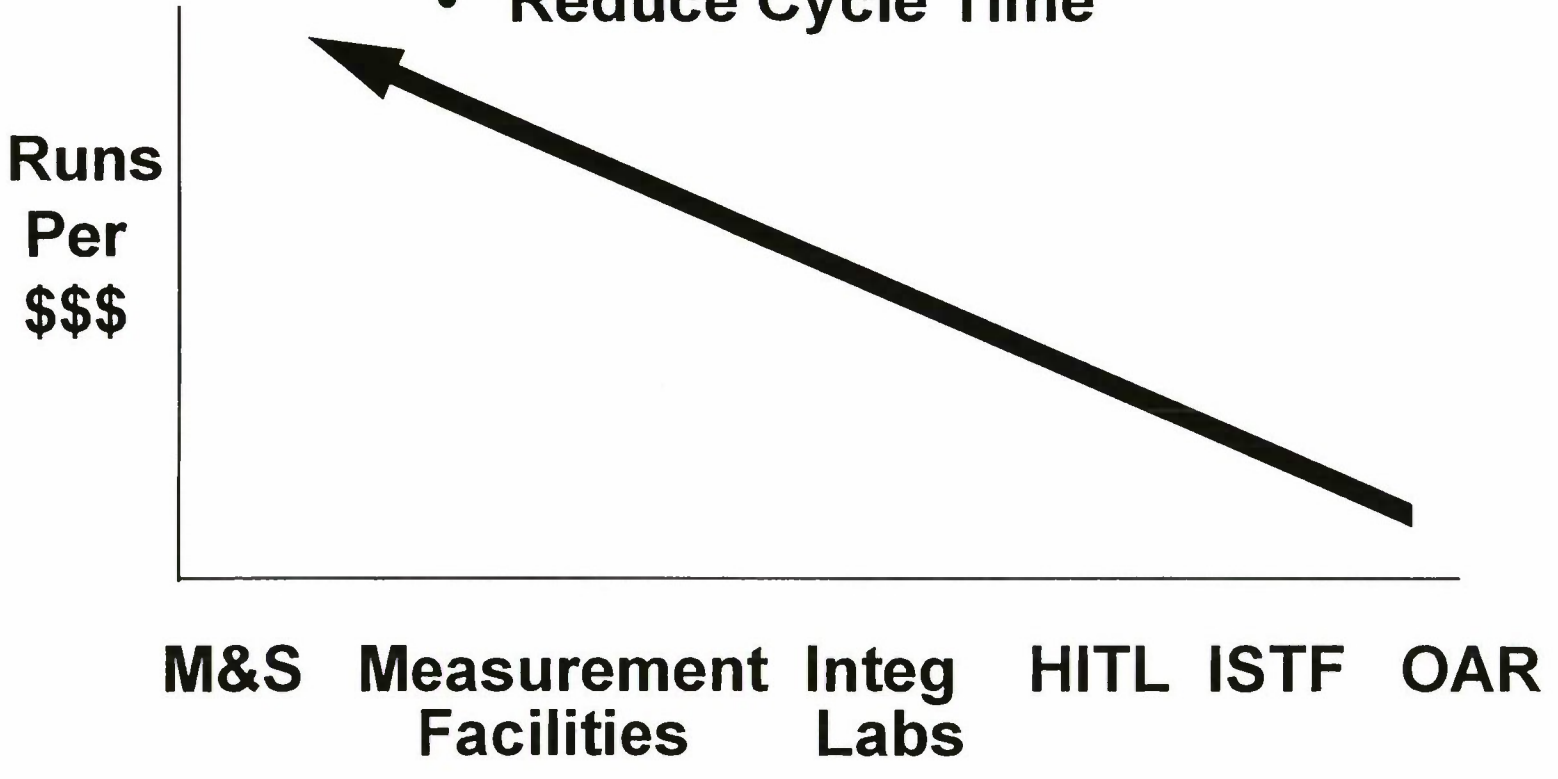




Plan/Conduct Tests

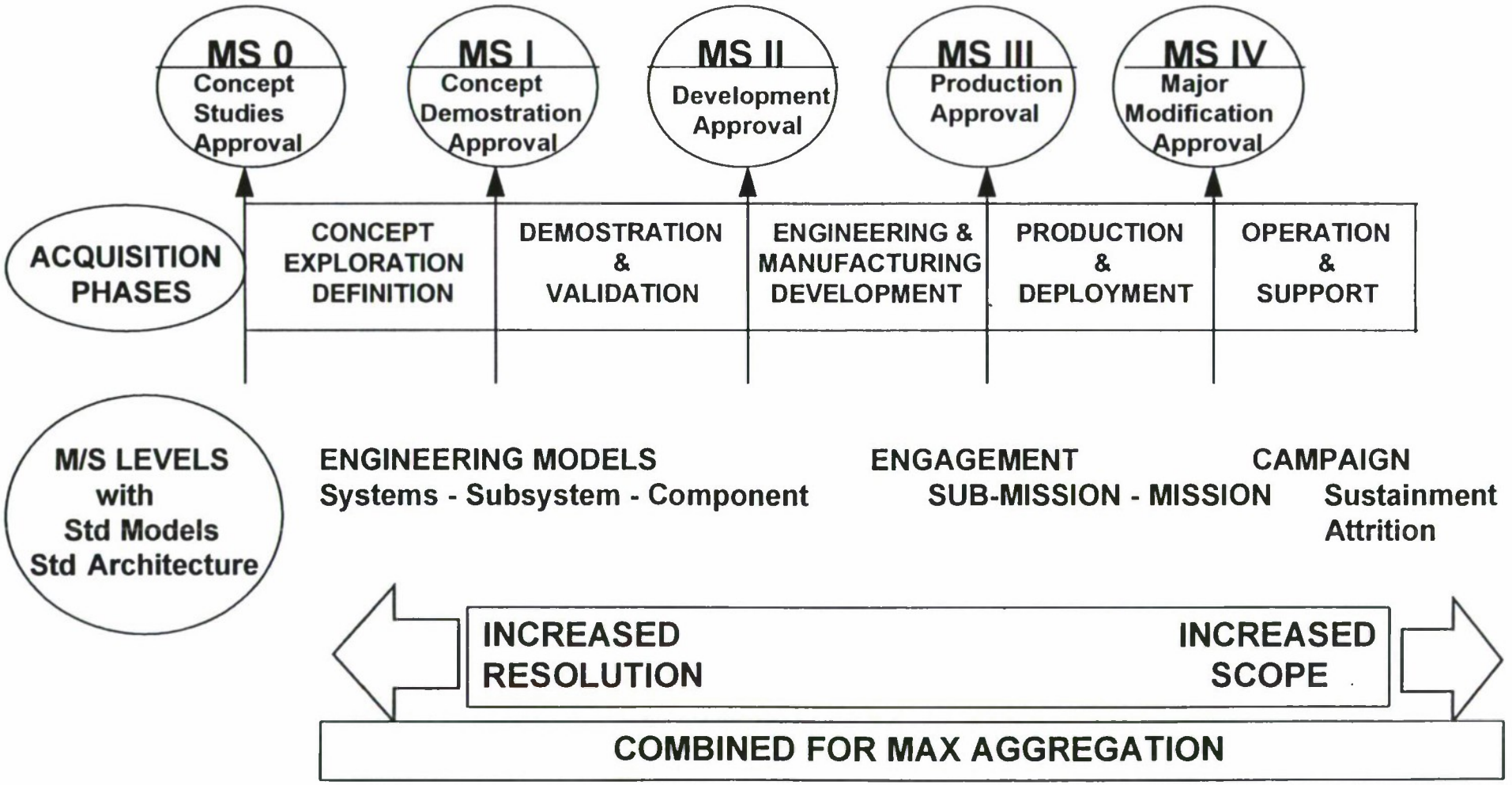


# MODELING & SIMULATION
## (Why The Emphasis?)

- Reduce Cost
- Reduce Cycle Time



# WEAPONS ACQUISITION AND MODELS & SIMS
## - Employing M&S at all Levels



# AF 4 Star - M&S REVIEW FINDINGS

- Customer and supplier at all M&S levels
  - Internal supplier and customer--system level
  - External supplier and customer--higher levels
- Variety of M&S tools support
  - Laboratories
  - Product Centers
  - Test Centers
  - Logistics Centers
- Funded out of projects/programs

# AF 4 Star - M&S REVIEW Recommendations

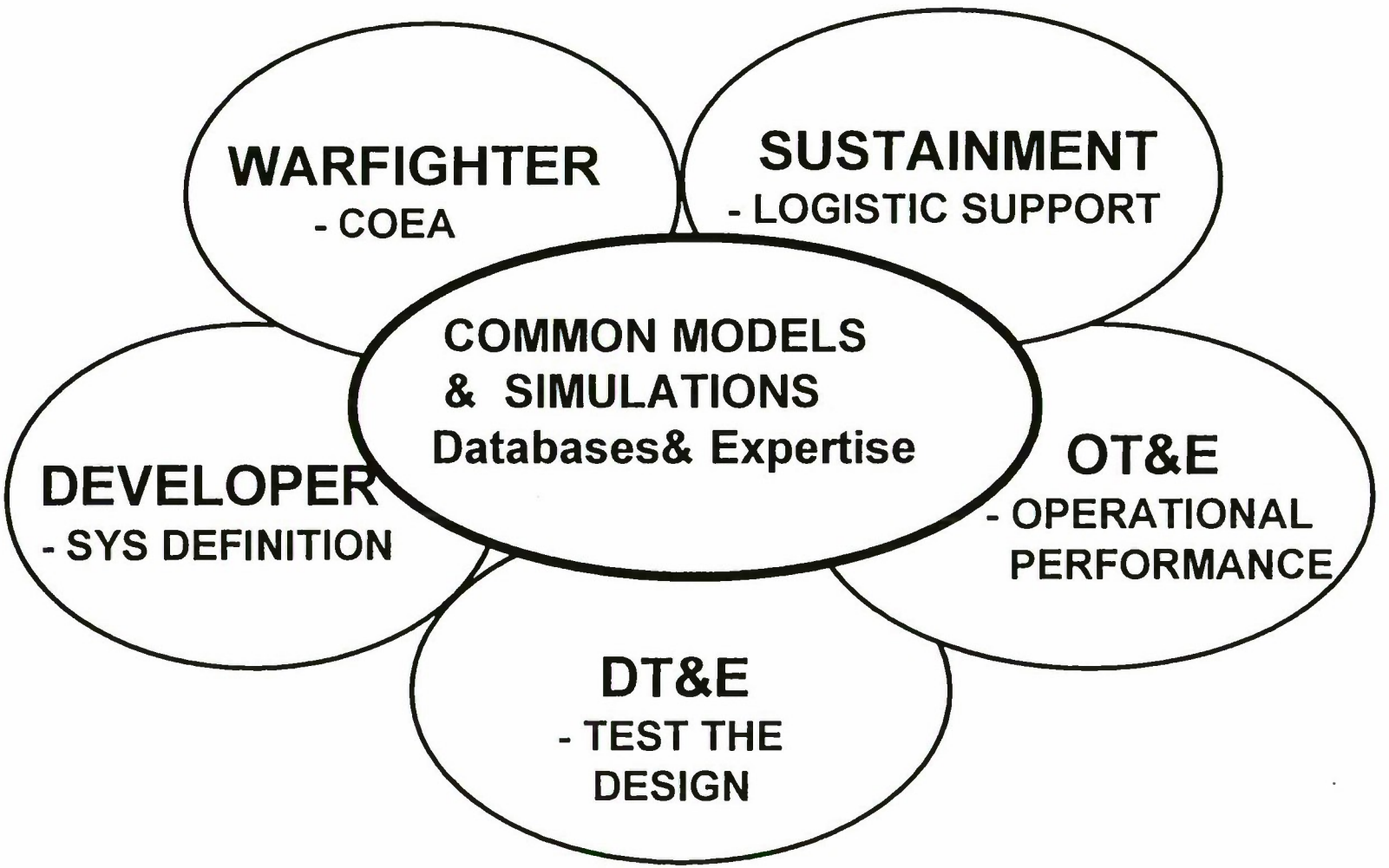
- Endorse Vision of an Integrated M&S Capability
- Enhance training simulation technology
  - UPGRADE KEY MODELS AND DATABASES
  - SUPPORT ARCHITECTURE AND STANDARDS DEFINITION
  - IMPLEMENT DISTRIBUTED SIMULATION CAPABILITY

# M&S Architecture

# M/S USERS & USE

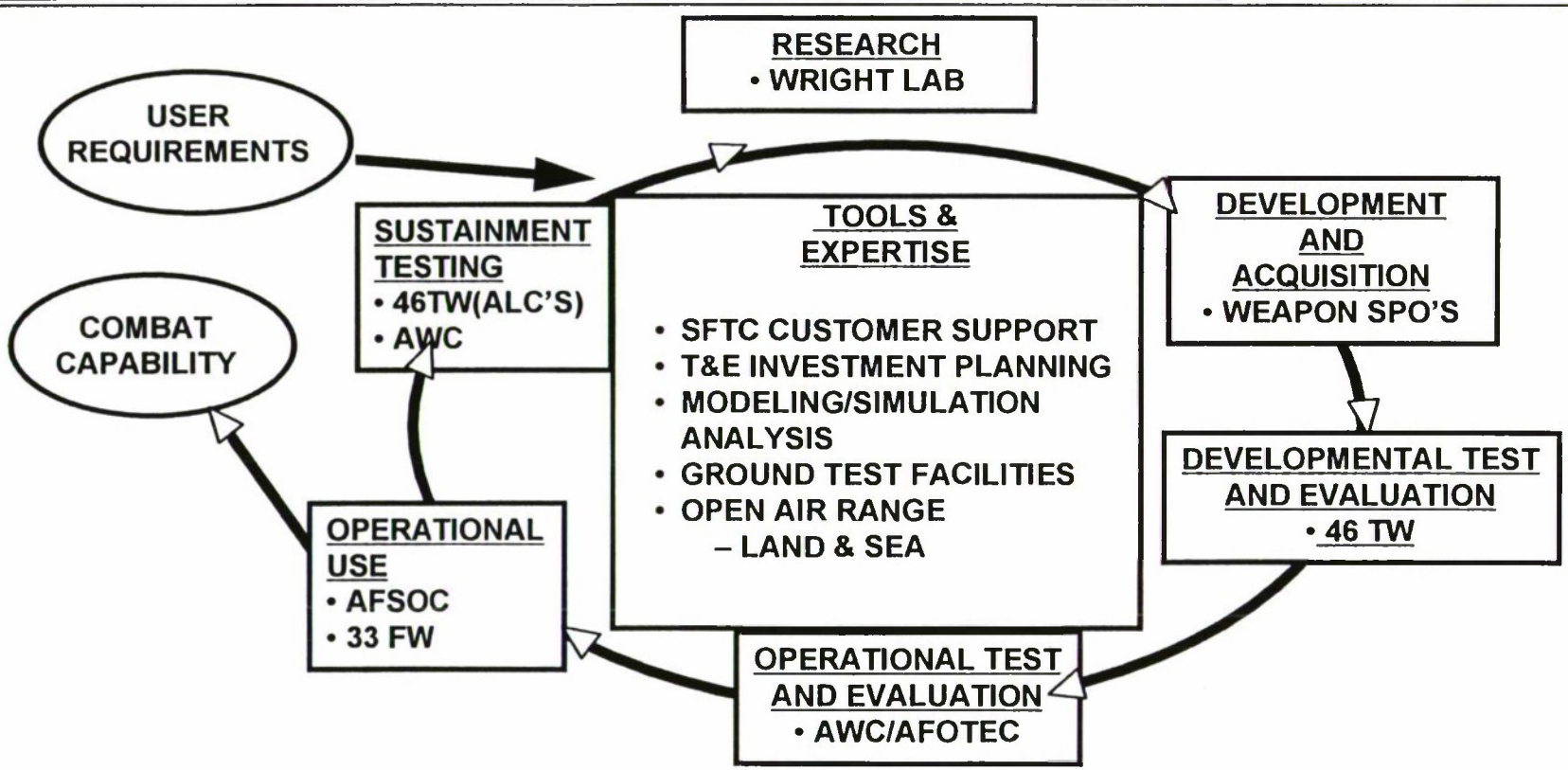
- **WARFIGHTER** - COEA
  - WARGAMES
- **DEVELOPER** - CONCEPT VALIDATION
  - SYSTEM TRADEOFFS
  - SYSTEM PERFORMANCE
- **DT&E** - TEST DESIGN
  - PRE-TEST ANALYSIS/PREDICTION
  - SCENARIO SIMULATION
- **OT&E** - OPERATIONAL PRE-TEST ANALYSIS/PREDICTION
  - INCREASED SCENARIO DENSITIES/FIDELITY
- **SUSTAINMENT** - LOGISTICS TRADEOFFS
  - ATTRITION RATES
  - STOCK PILE INVESTIGATION/VALIDATION

# AN INTEGRATED SYSTEMS APPROACH TO M/S



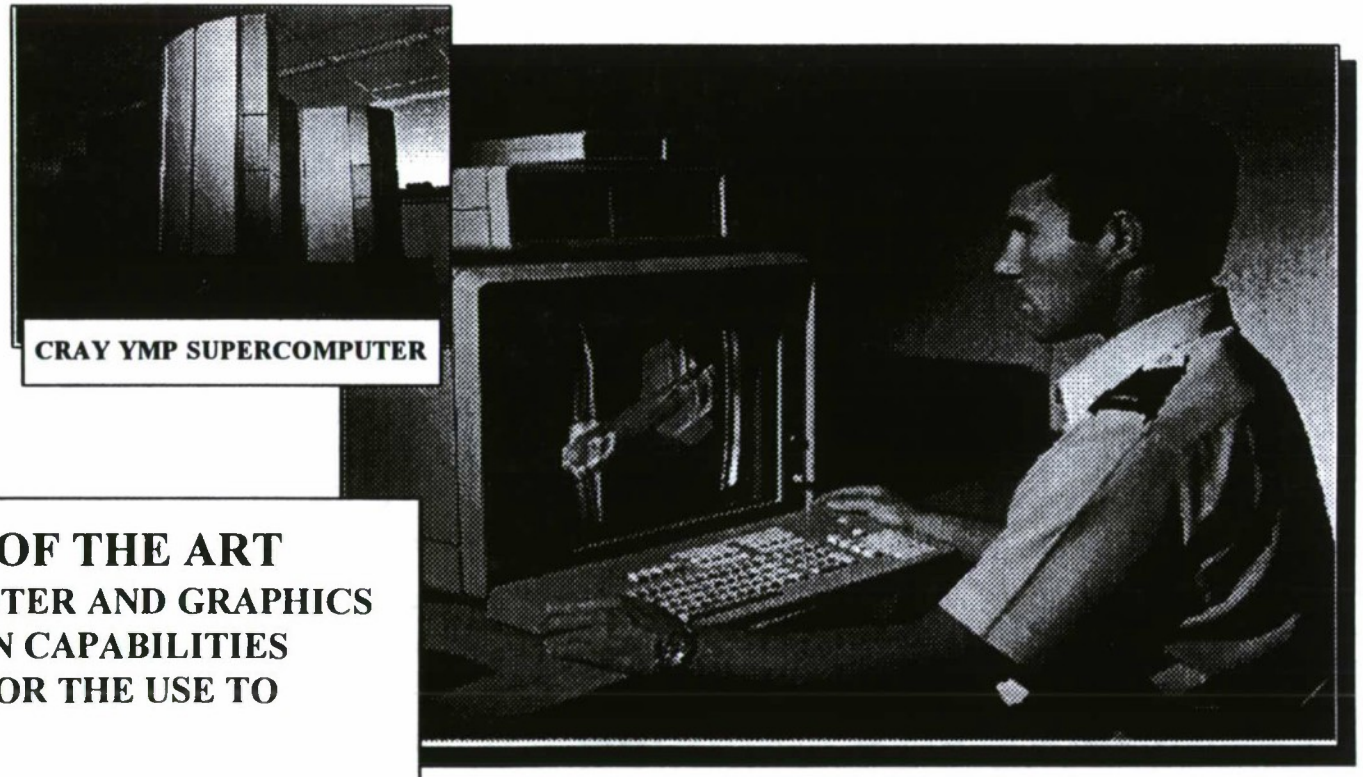
# M&S Applications

# TEAM EGLIN
# WEAPONS DEVELOPMENT/ ACQUISITION/DEPLOYMENT




**BOTTOM LINE: FULL LIFE CYCLE CAPABILITY**

# FREEMAN COMPUTER SCIENCES CENTER



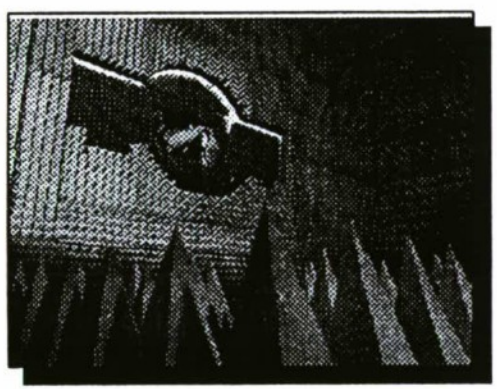
CRAY YMP SUPERCOMPUTER

## STATE OF THE ART

**SUPERCOMPUTER AND GRAPHICS VISULIZATION CAPABILITIES AVAILABLE FOR THE USE TO**

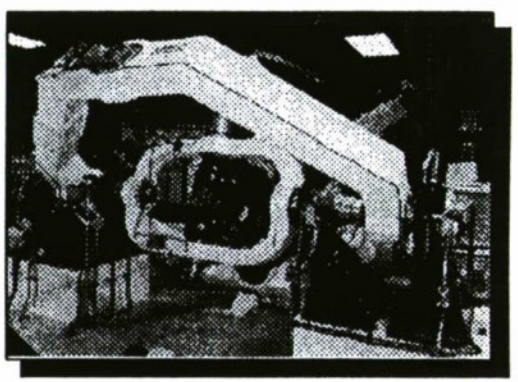
- **MODEL**
- **SIMULATE**
- **VALIDATE CONCEPTS**
- **MAKE ASSESSMENTS**

# GUIDED WEAPONS EVALUTION FACILITY (GWEF)

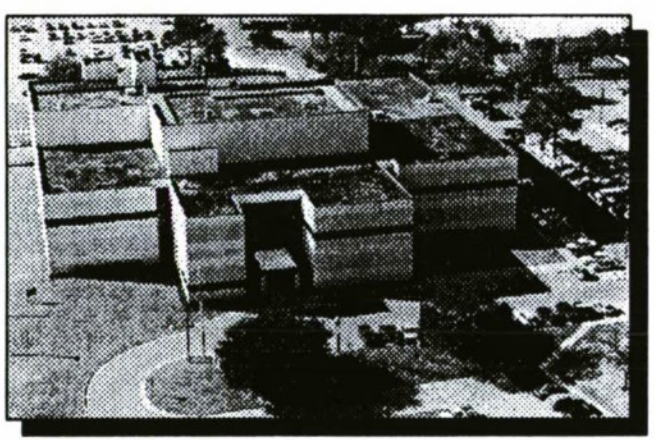


ANECHOIC CHAMBERS

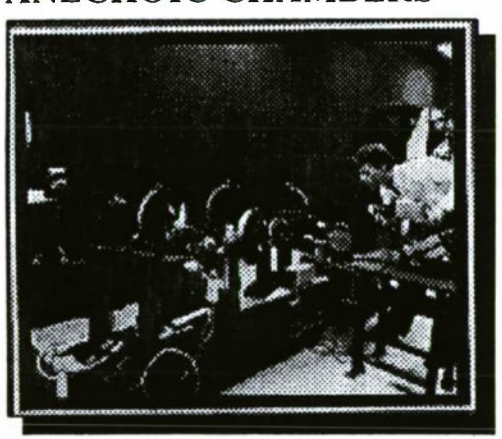
DIGITAL AND HARDWARE -IN-THE-LOOP SIMULATION, CHARACTERIZATION AND COUNTER-COUNTERMEASURE TESTING OF GUIDED WEAPONS IN A SECURE FACILITY.



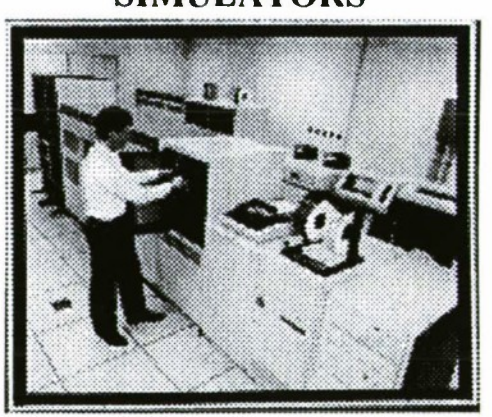
FLIGHT MOTION SIMULATORS



COMPLETE SPECTRAL, MULTI-FUNCTIONAL TEST FACILITY



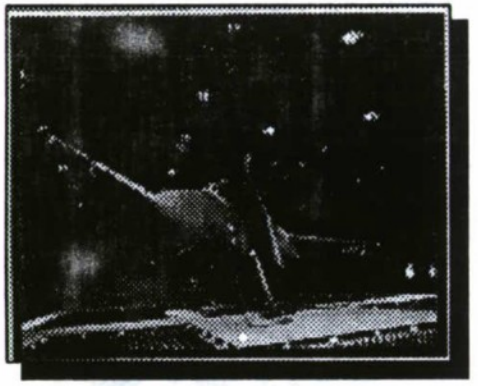
PARAMETRIC MEASUREMENT SYSTEMS



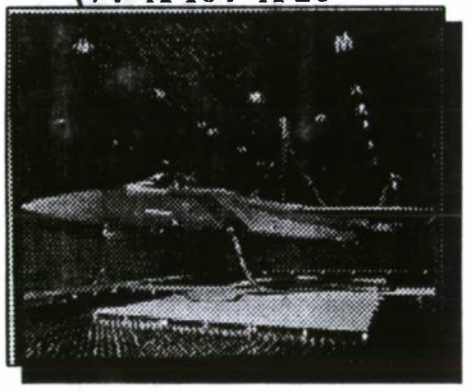
COMPUTER SYSTEMS

# PREFLIGHT INTEGRATION OF MUNITIONS AND ELECTRONIC SYSTEMS (PRIMES)

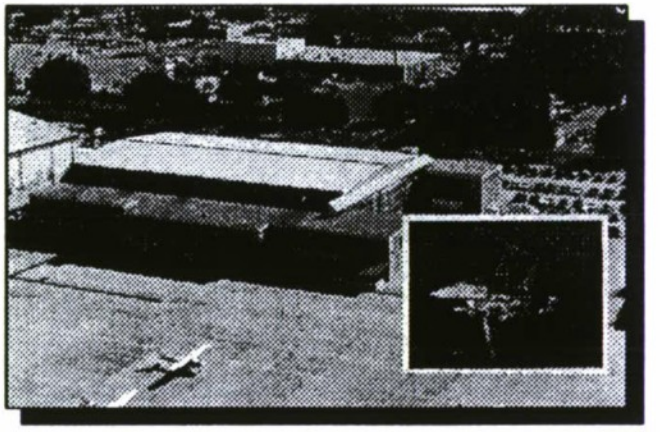
PROVIDE COST EFFECTIVE TOOLS AND TECHNIQUES FOR TEST AND EVALUATION OF INTEGRATED WEAPONS SYSTEMS IN A REALISTICALLY DENSE, SECURE CONTROLLED ENVIRONMENT .



ANECHOIC CHAMBERS
(74' X 104' X 26'



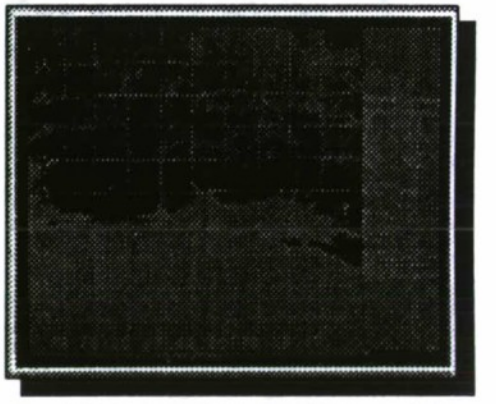
EMI/EMC TESTING



PRIMES FACILITY



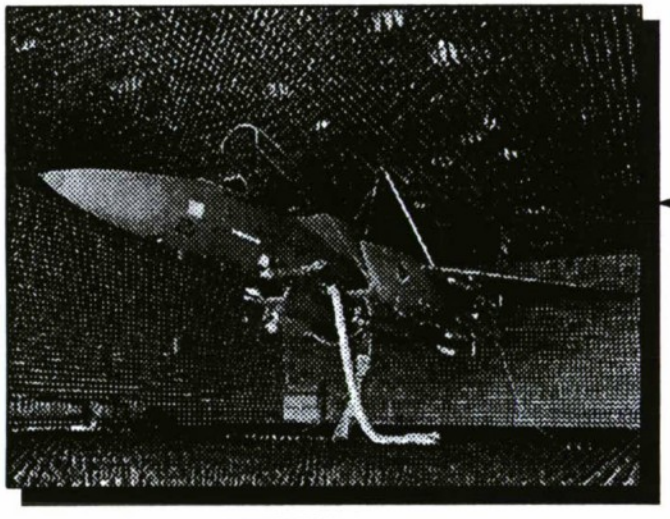
DATA PROCESSING LAB



DYNAMIC SCENARIO DISPLAY

# GWEF-PRIMES LINK

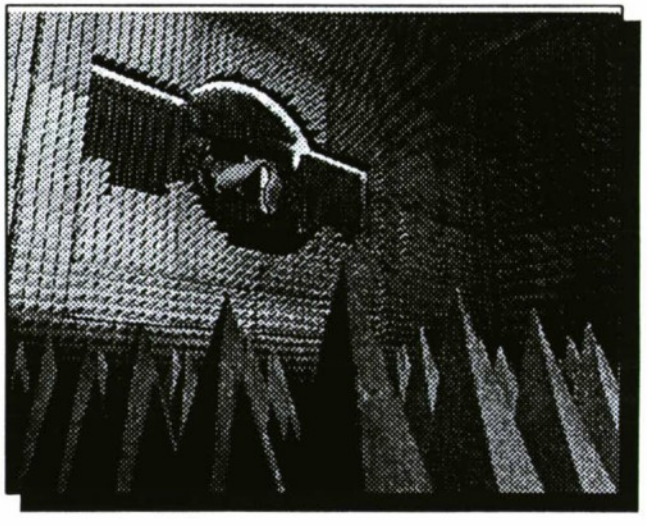
**PRIMES**



**FIBER OPTIC**

**LINK**

**GWEF**



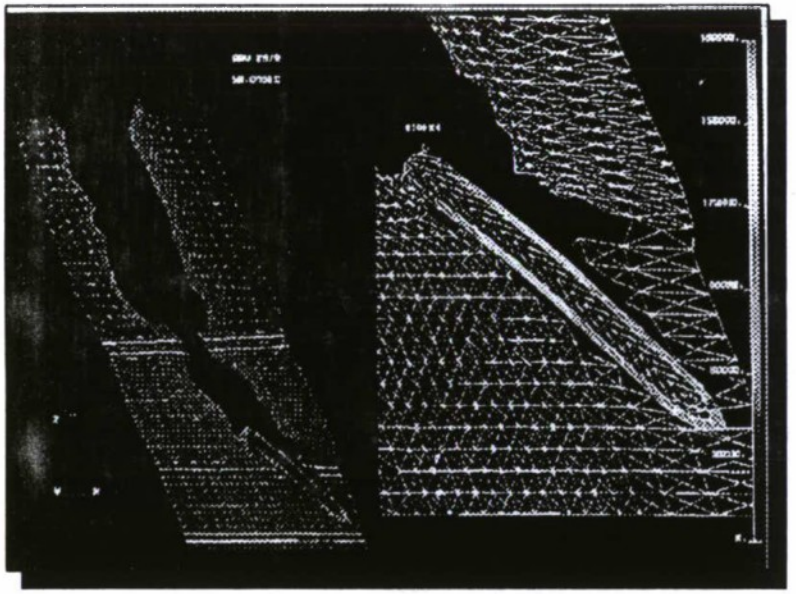
**PRELAUNCH PHASE**
- **TARGET DENIAL**
- **INTEROPERABILITY**

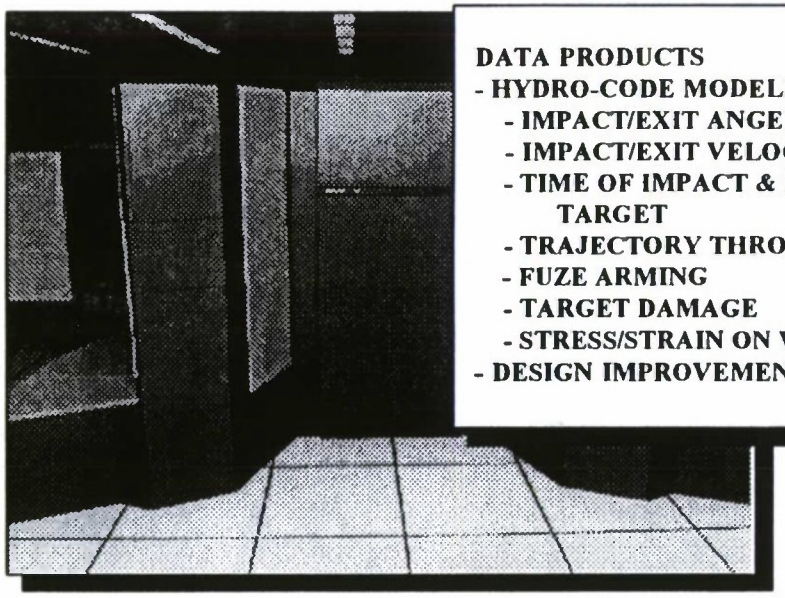
**LAUNCH PHASE**
- **SEEKER CCM**

**MIDCOURSE PHASE**
- **DATA LINK CCM**
- **BPS ECCM**

**EMD-GAME PHASE**
- **FUZINING CCM**
- **SEEKER CCM**

# DIGITAL MODELING AND SIMULATION GBU-28





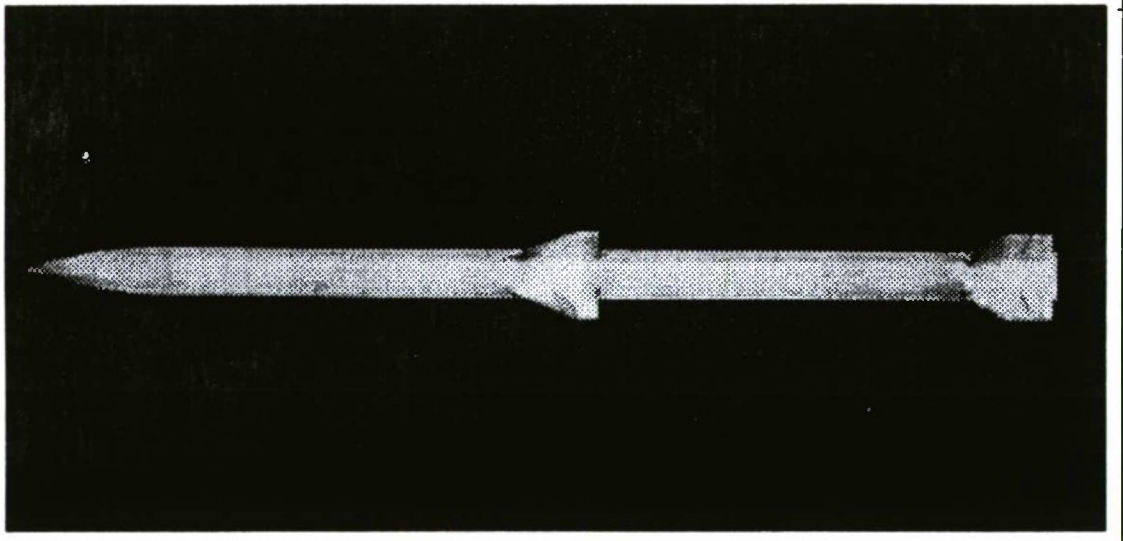
**DATA PRODUCTS**
- **HYDRO-CODE MODELING PREDICTS:**
  - **IMPACT/EXIT ANGELS**
  - **IMPACT/EXIT VELOCITIES**
  - **TIME OF IMPACT & EXIT FROM TARGET**
  - **TRAJECTORY THROUGH TARGET**
  - **FUZE ARMING**
  - **TARGET DAMAGE**
  - **STRESS/STRAIN ON WARHEAD**
- **DESIGN IMPROVEMENT**

**MAINTAINS COMPUTATIONAL EXPERTISE TO ASSIST MODELLERS AND SIMULATORS**

- **GBU-28 SIMULATIONS OF EXPECTED PERFORMANCE**
- **SIMULATED PENETRATORS, EXPLOSIVE AND FUZES COULD SURVIVE IMPACT AND DETONATE**

| AIRFOIL GROUP | FUZE | WARHEAD | GUIDANCE & CONTROL |
|---|---|---|---|

# MODELING AND SIMULATION
# AMRAAM



## DATA PRODUCTS

**AERO PERFORMANCE**
- TIME OF FLIGHT
- MISSILE TRAJECTORY
- END GAME ENCOUNTER GEOMETRY

**SEEKER PROCESSING PROBABILITY OF:**
- GUIDE
- FUZING
- KILL

**MISSILE ENVELOPES**
**LETHALITY**
**AIRCRAFT INTERFACE DEFINITION**

| SEEKER | GUIDANCE AND CONTROL | TARGET DETECTION DEVICE | WARHEAD | ROCKET MOTOR |
|---|---|---|---|---|

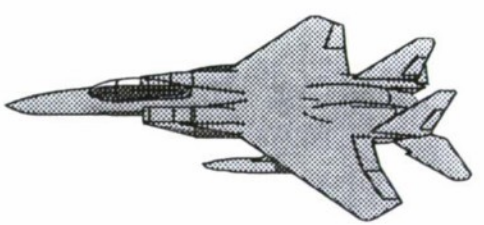
# BENEFITS OF M&S

## AMRAAM P$^3$I At AFDTC

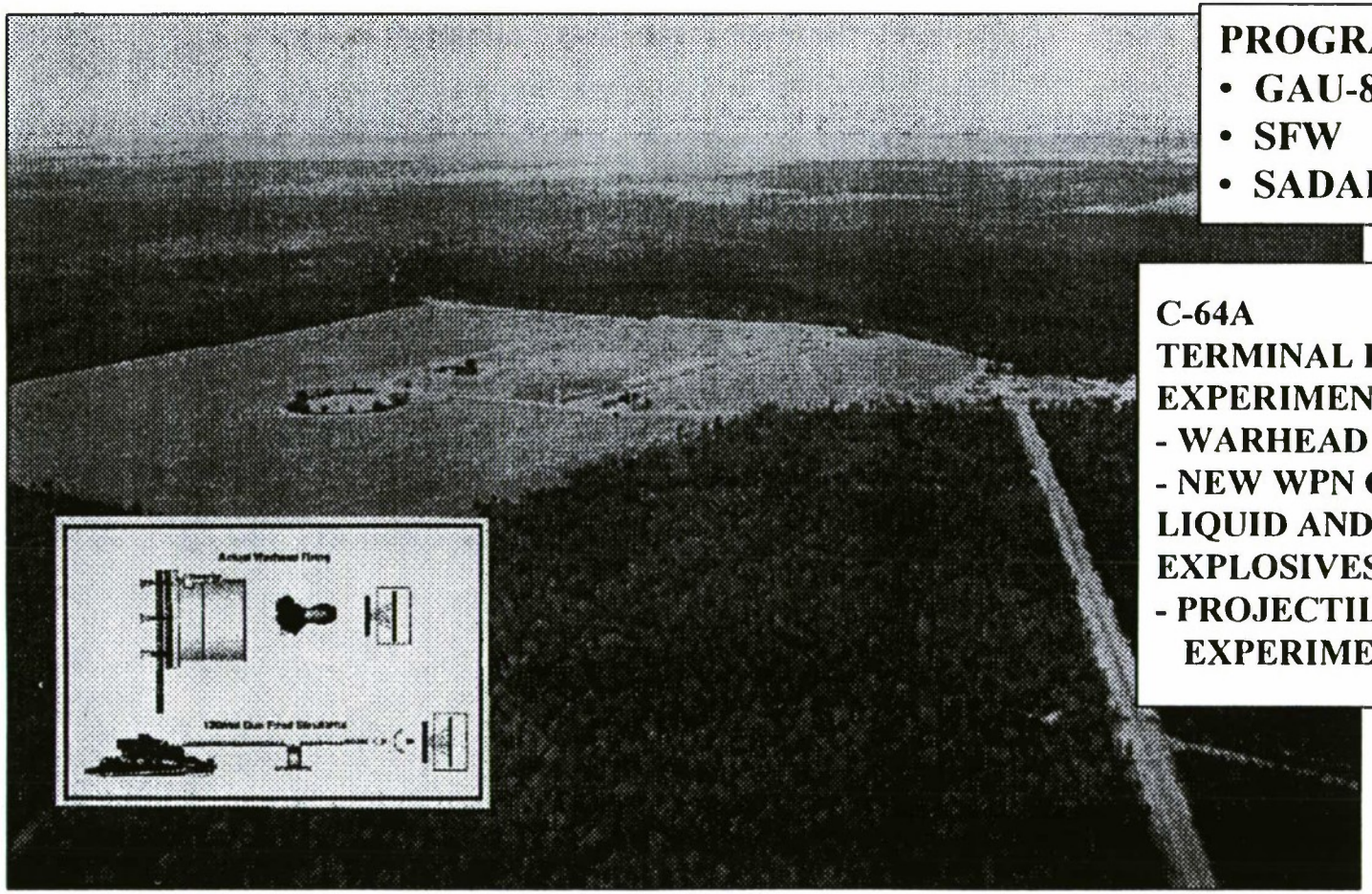
- Simulation Results Provide Pre-Launch Prediction of Mission Effectiveness Based on Mission Scenario
  - -Captive Flight Test Requirements Reduced
    - –Elimination of 12 Captive Flights, One Launch Mission
    - –Saved $2.5M Test Assets and $250K In Analysis/Range Costs







# TERMINAL EFFECTS RANGE



**PROGRAMS SUPPORTED**
- **GAU-8 API**
- **SFW**
- **SADARM**

**C-64A**
**TERMINAL EFFECTS AND EXPERIMENTATION FACILITY**
**- WARHEAD EXPERIMENTS**
**- NEW WPN CONCEPTS WITH LIQUID AND SOLID EXPLOSIVES**
**- PROJECTILE BALLISTIC EXPERIMENTS**

# TERMINAL EFFECTS SUPPORT MODELS

- POINT BURST DAMAGE ASSESSMENT MODEL (PDAM)
  - DEVELOPED BY AF IN EARLY 70s
  - PROVIDES TARGET VULNERABILITY & MUNITIONS EFFECTIVENESS DATA
- MUNITIONS INFORMATION LIBRARY AND EVALUATION SYSTEM (MILES)
  - MUNITIONS EVALUATION AND PERFORMANCE DATABASE
  - LETHALITY EVALUATION AND ANALYSIS PROGRAM SUITE
- TARGET AND BACKGROUND INFORMATION LIBRARY SYSTEM
  - GROUND TARGET AND BACKGROUND SIGNATURE DATABASE (TABILS)
  - CONTAINS OVER 400 GBYTES OF EO/ER, MMW, AND SEISMIC, ACOUSTIC, MAGNETIC IMAGERY AND SIGNATURES

# FLYOUT MODEL INFORMATION CENTER

- REPOSITORY OF STANDARD HIGH FIDELITY SAM AND AAA FLYOUT MODELS
- SERVICES INCLUDE
  - SOFTWARE DEVELOPMENT
  - CONFIGURATION CONTROL
  - MODEL DISTRIBUTION
  - V&V DOCUMENTATION DISTRIBUTION

# KEY ACQUISITION MODELS AND SIMULATIONS (KAMS)

- TOTAL WEAPON SYS TEST ENVIRONMENT (TWSTE)
  POC: MR DAVID SCHOCH ORG: 46TW/TSWW PH: (904) 882-9354

- TARGET AND BACKGROUND INFO LIBRARY SYS (TABILS)
  POC: MR IAN TALBOT ORG: 46OG/OGML PH: (904) 882-9243

- POINT BURST DAMAGE ASSESSMENT MODEL (PDAM )-VV&A
  POC: MR BOB STOVALL ORG: 46OG/OGML PH: (904) 882-9243

- MUNITIONS INFO LIBRARY AND EVALUATION SYS (MILES)
  POC: MR IAN TALBOT ORG: 46OG/OGML PH: (904) 882-9243

- FLYOUT MODEL INFO CENTER (FMIC)
  POC: MR BOBBY JONES ORG: 96CG/SCTO PH: (904) 882-4617

# C4I NETWORKS AND LINKS
## (UNFUNDED)

## PROGRAM DESCRIPTION

**Improved communications network infrastructure (inter and intrabase) to expand linking with other facilities.**

- **⇒Realtime data links to support C4ISR testing**
- **⇒A Defense Simulation Internet node**
- **⇒Additional high-speed T-1 lines**
- **⇒Implement a SIPRNET point of presence**

**SCHEDULE**

| | FY96 | FY97 | FY98 | FY99 | FY00 | FY01 | FY02 |
|---|---|---|---|---|---|---|---|
| **NETWORKS &LINKS** | | △ | | | △ | | |

# C4ISR BATTLE LAB
## (UNFUNDED)

**PROGRAM DESCRIPTION**

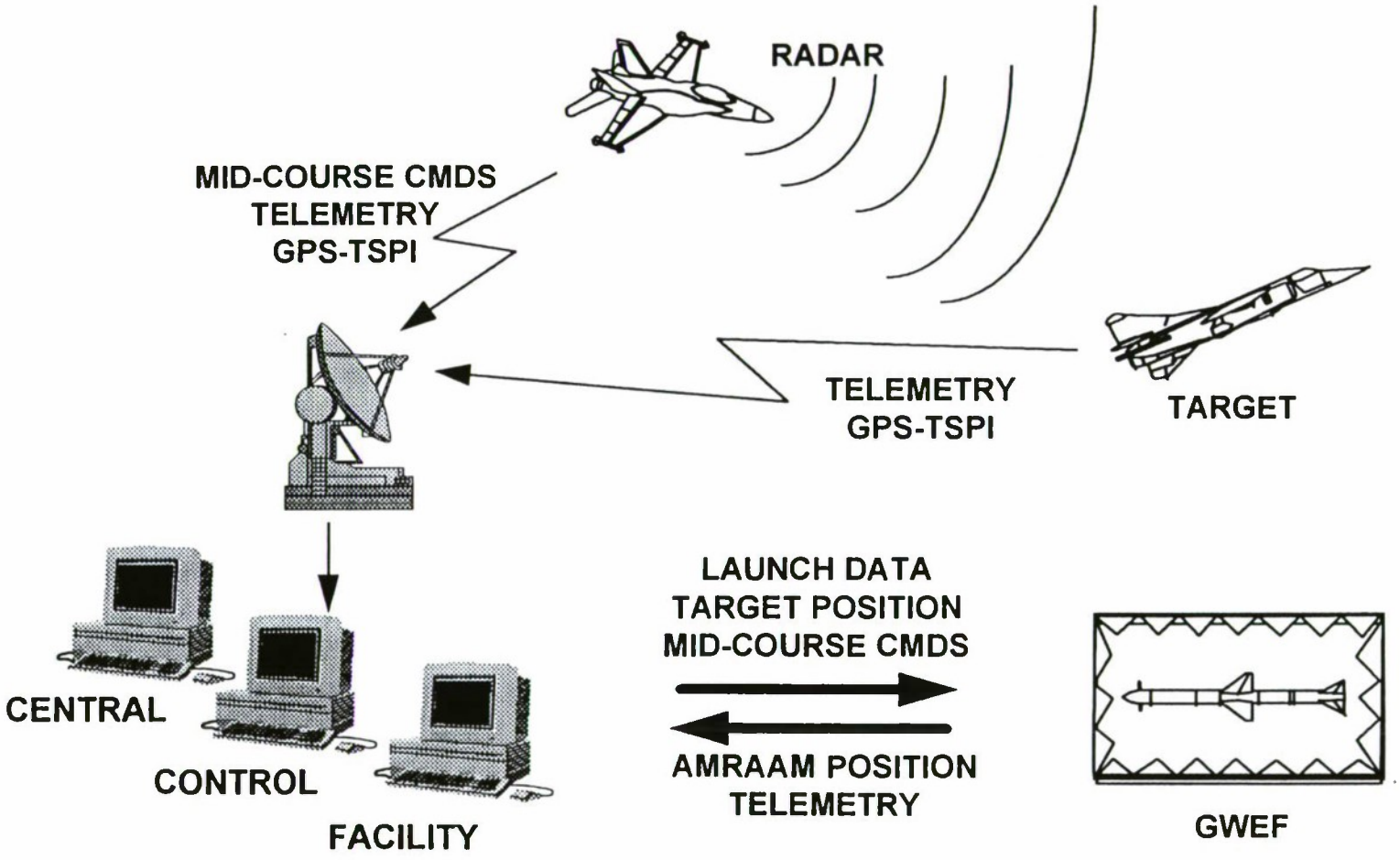
**Expansion of current C4ISR support capabilities**

- **⇒12 SunSPARC workstations with peripherals**
- **⇒Workstations to support new common C4ISR design**
- **⇒ LANs installed for processing up to TopSecret/SCI**
- **⇒ Hub in Bldg 380 will be linked to PRIMES and 53rd Wing facility at Hurlburt.**

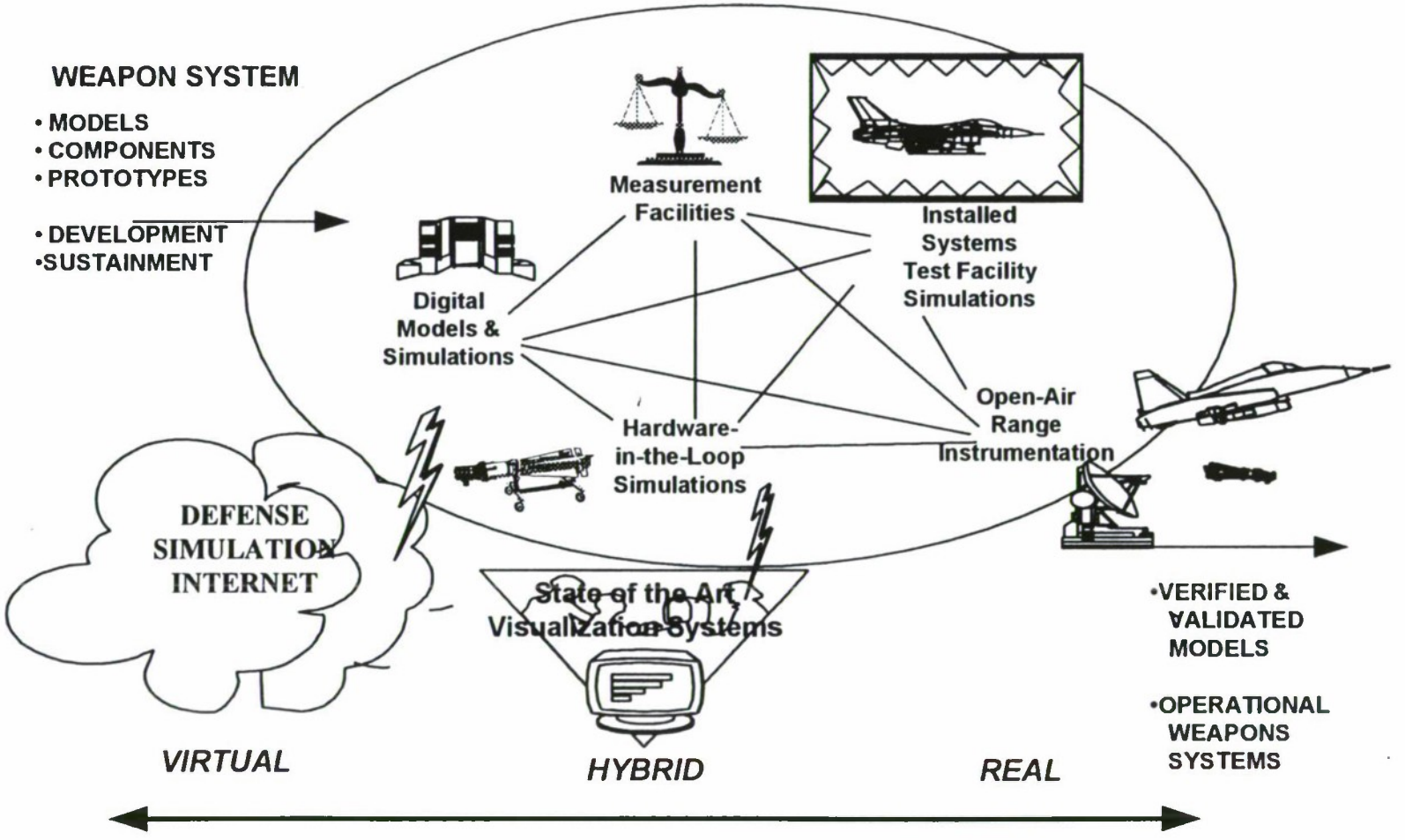
**SCHEDULE**

| | FY96 | FY97 | FY98 | FY99 | FY00 | FY01 | FY02 |
|---|---|---|---|---|---|---|---|
| **C4ISR** | | | △ | | | △ | |

# JADS
# SYSTEM INTEGRATION
# AMRAAM TEST SCENARIO



# VISION --- "HIGHLY INTEGRATED T&E COMPLEX"

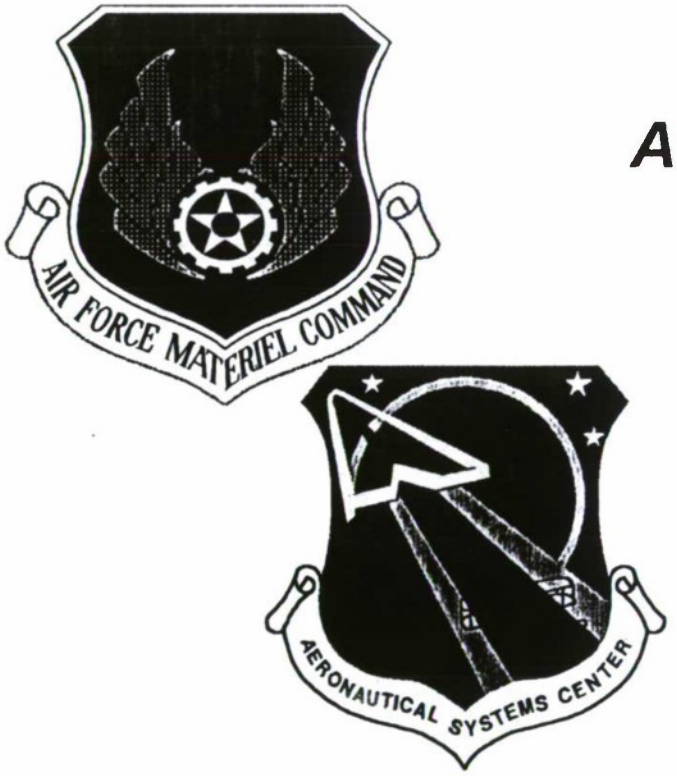


# Summary

# SUMMARY

- **AFDTC**
  - **M&S BEING INTEGRATED INTO ALL PHASES OF THE T&E PROCESS TO SUPPORT LIFE CYCLE OF WEAPONS SYSTEMS**
  - **OWNS KEY M&S T&E FACILITIES/ CAPABILITIES**
  - **AF COE FOR M&S APPLICATIONS RELATING TO ARMAMENT/MUNITIONS TEST AND EVALUATION**

- **AFDTC APPLIES 4-STAR INTEGRATED M&S APPROACH TO T&E IN SUPPORT OF WEAPONS ACQUISITION AND SUSTAINMENT**




# AERONAUTICAL SYSTEMS CENTER MODELING, SIMULATION, AND ANALYSIS INITIATIVES

**STEVEN J. WOURMS**
DEVELOPMENT PLANNING DIRECTORATE

**1 MAY 1996**

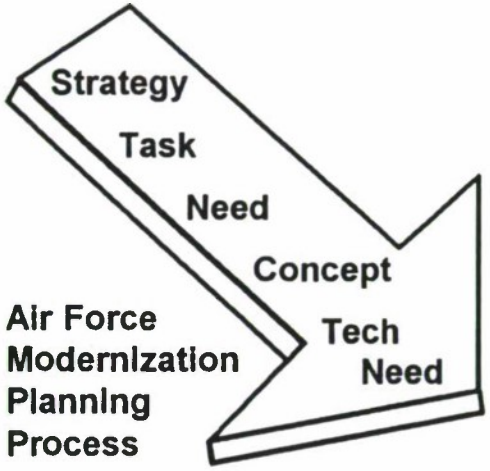
# PRESENTATION OVERVIEW



- BREADTH OF ASC PARTICIPATION IN AERONAUTICAL SYSTEM DEVELOPMENT
- BREADTH OF MODELING, SIMULATION, AND ANALYSIS (MS&A) EXPERTISE
- FEDERATION OF MS&A ORGANIZATIONS

# BREADTH OF ASC PARTICIPATION IN AERONAUTICAL SYSTEM DEVELOPMENT



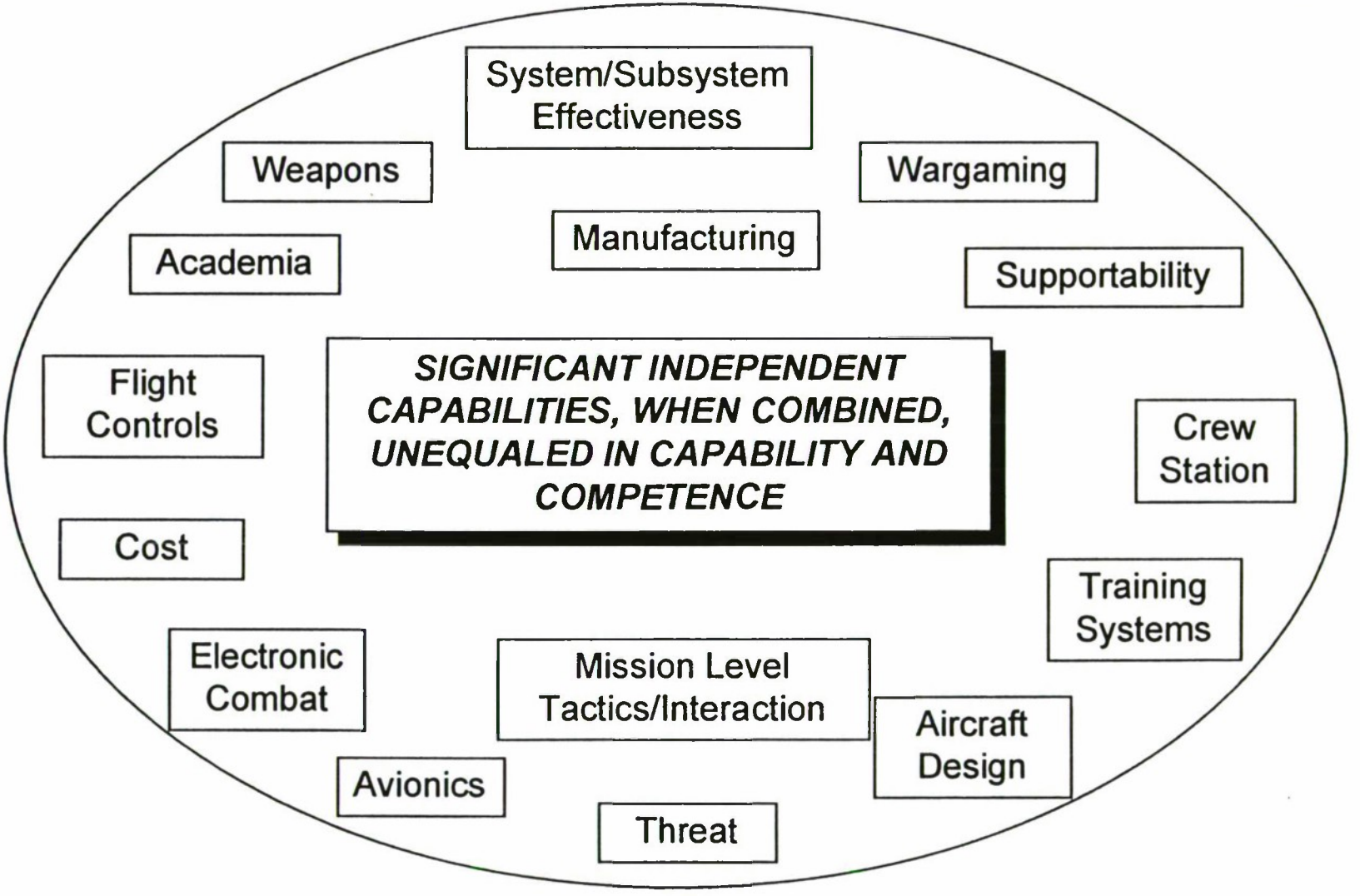



| Concept Exploration | Demonstration Validation | Engineering & Manufacturing Development | Production, Deployment, Support |
|---|---|---|---|
| MNS | ORD<br>TEMP<br>COEA | | |

Science & Technology Base

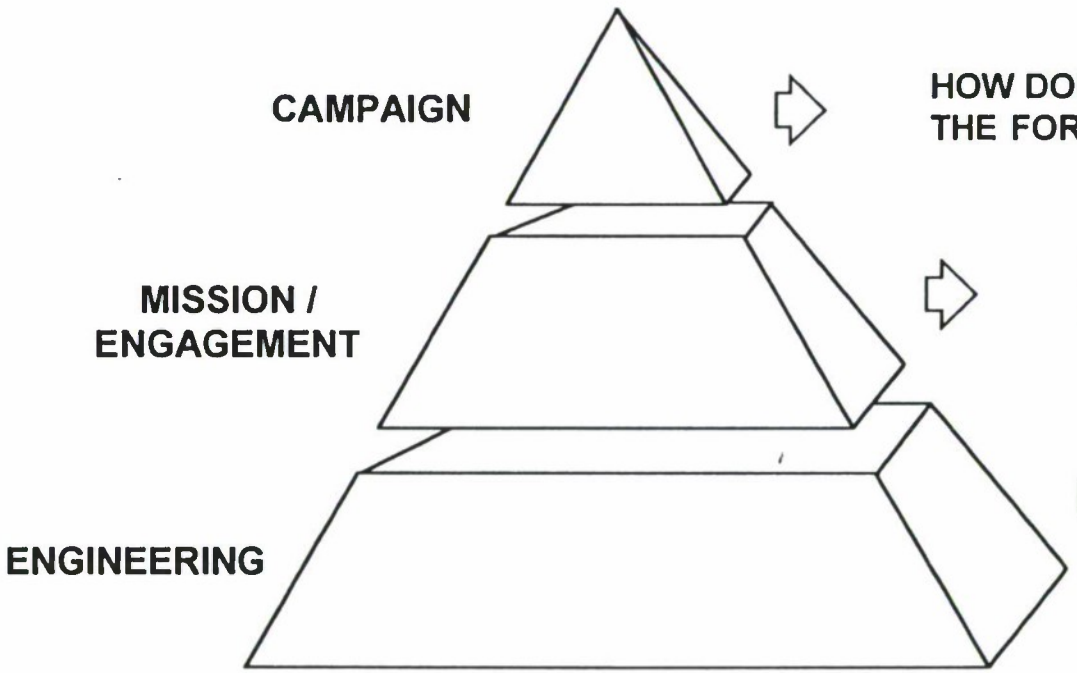
# BREADTH OF MS&A EXPERTISE
## ASC PLUS TENANT ORGANIZATIONS AT WRIGHT-PATT





# ANALYSIS HIERARCHY






HOW DOES THIS CONCEPT EFFECT THE FORCE'S CAPABILITIES?

HOW EFFECTIVE IS THE CONCEPT IN AIR-TO-AIR / AIR-TO-GROUND?

WHAT IS THE PERFORMANCE OF THE SYSTEM CONCEPT?

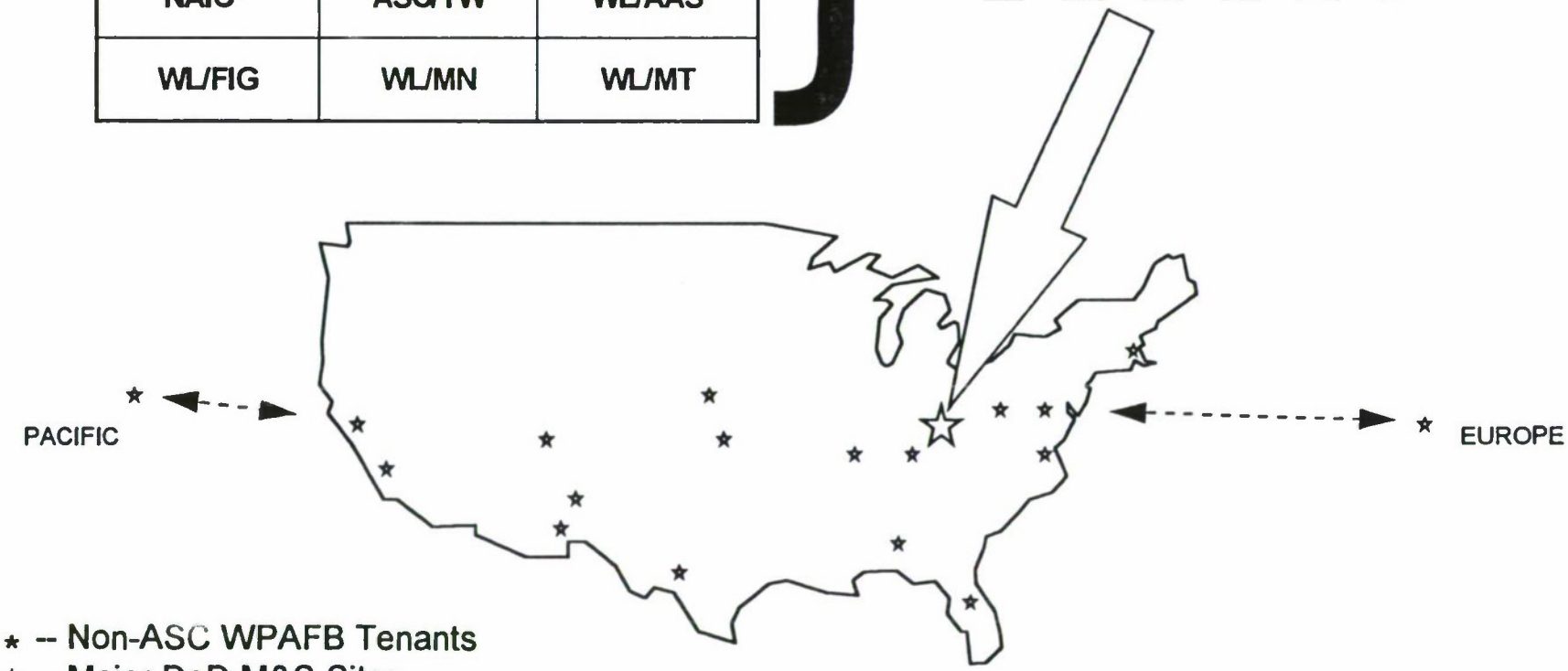
***ASC MS&A EXPERTISE COVERS ENTIRE ANALYSIS PYRAMID***

# ASC POISED FOR WORLD-WIDE DISTRIBUTED INTERACTIVE SIMULATION PARTICIPATION



| | | |
|---|---|---|
| AFIT * | AL/CF * | ASC/AL |
| ASC/ENFC | ASC/LN | ASC/RA |
| ASC/XRA | ASC/XRD | ASC/XRJ |
| NAIC * | ASC/YW | WL/AAS |
| WL/FIG | WL/MN | WL/MT |

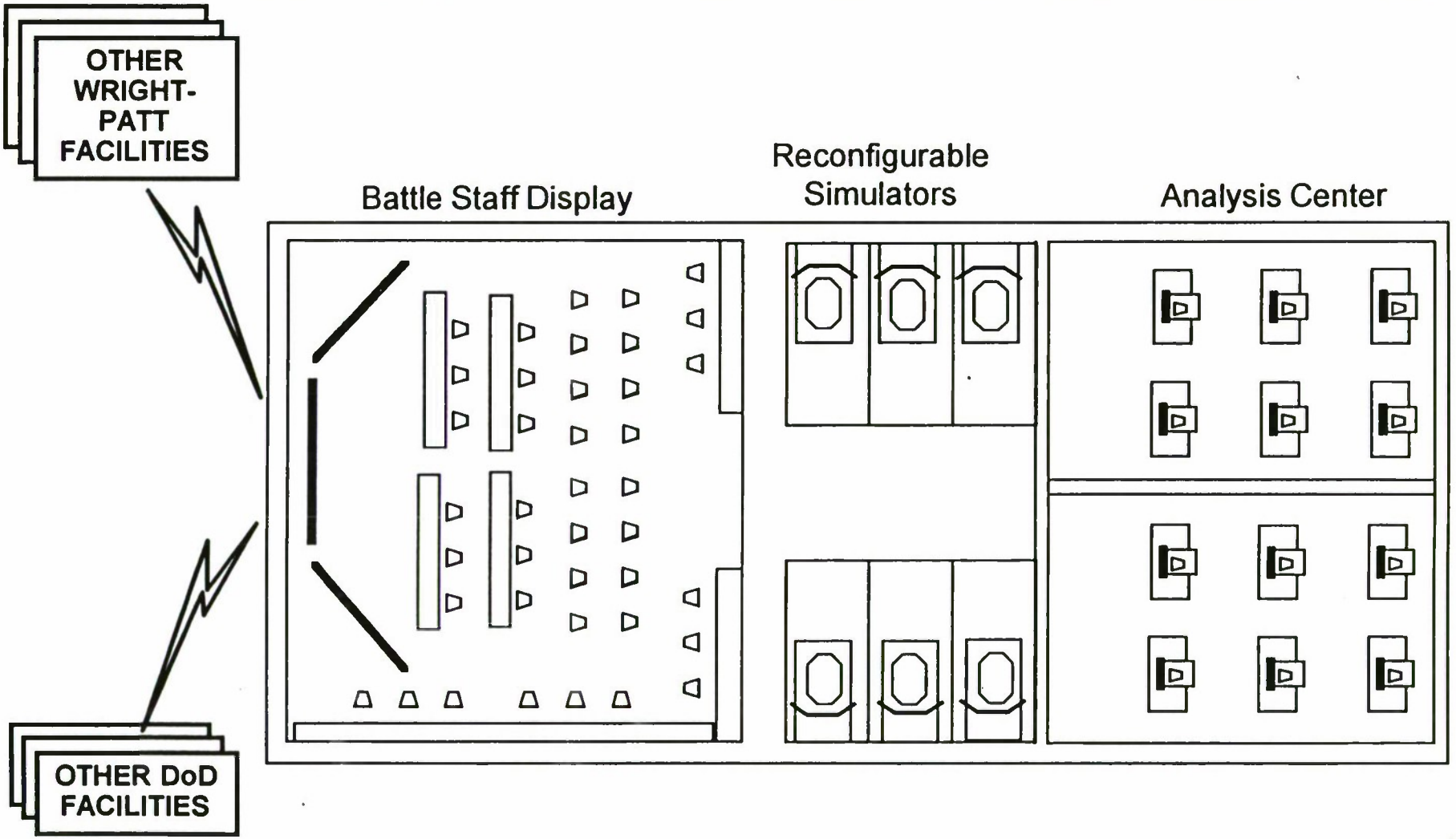
PROPOSED ASC SIMULATION AND ANALYSIS FACILITY




★ -- Non-ASC WPAFB Tenants
☆ -- Major DoD M&S Sites

# ASC SIMULATION AND ANALYSIS FACILITY (SIMAF)





# FEDERATION OF MS&A ORGANIZATIONS

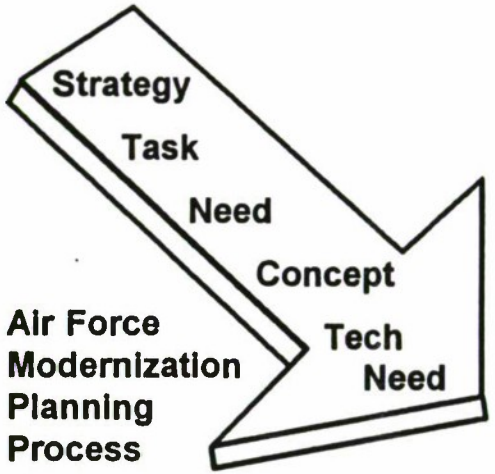


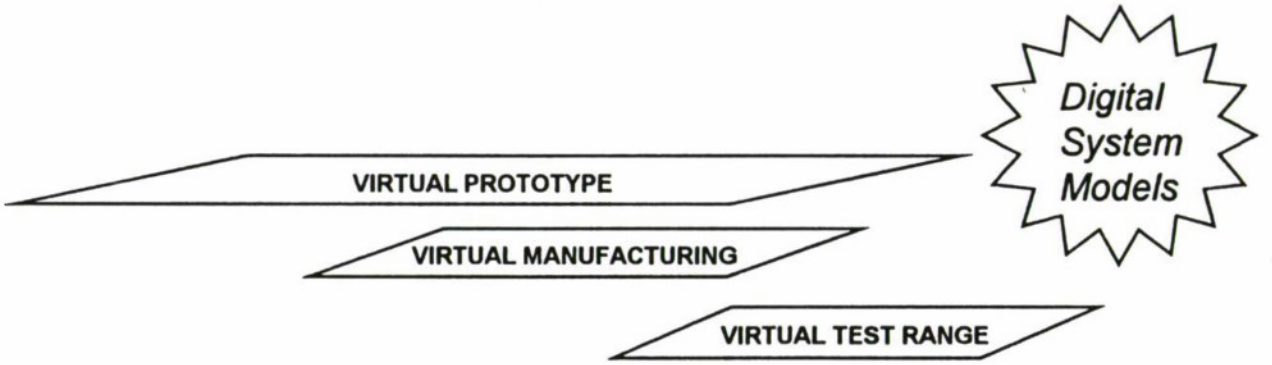
- INTEGRATION OF ASC FACILITIES AND CAPABILITIES
  - **"DISTRIBUTED, COLLABORATIVE MS&A FEDERATION"**
    - DISTRIBUTED: FACILITIES REMAIN IN CURRENT LOCATIONS
    - COLLABORATIVE: INTERCONNECTED ASSETS WORKING COMMON PROJECTS
  - **ACQUISITION AND LABORATORY**
    - SYSTEMS ACQUISITION MISSION UNIT (SAMU) -- ACQUISITION FUNCTION
    - WRIGHT LABORATORY (WL) -- AVIONICS, FLIGHT DYNAMICS, MANUFACTURING TECHNOLOGY, MATERIALS, AND PROPULSION DIRECTORATES
- CO-OPT NON-ASC ORGANIZATIONS LOCATED AT WRIGHT-PATT
  - **AIR FORCE INSTITUTE OF TECHNOLOGY (AIR UNIVERSITY)**
  - **ARMSTRONG LABORATORY (HUMAN SYSTEMS CENTER)**
  - **NATIONAL AIR INTELLIGENCE CENTER (AIR FORCE INTELLIGENCE COMMAND)**

***MS&A DEEMED AN ASC "CRITICAL PROCESS"***

# ASC VISION: EMPLOY MS&A FROM CONCEPTION THROUGH SUSTAINMENT

Advance Planning Briefing to Industry — Orlando FL 1 May 96




| Concept Exploration | Demonstration Validation | Engineering & Manufacturing Development | Production, Deployment, Support |
|---|---|---|---|

MNS

ORD
TEMP
COEA

Science & Technology Base



# SUMMARY



- ASC HAS SIGNIFICANT MS&A CAPABILITIES AND FACILITIES IN PLACE
- MS&A DEEMED ASC "CRITICAL PROCESS"
  - **CROSS-CENTER FEDERATION OF EXISTING ORGANIZATIONS**
  - **SIMULATION AND ANALYSIS FACILITY IN FY97**
  - **CO-OPT NON-ASC WPAFB TENANTS**
- GOAL: BECOME RECOGNIZED AS THE CENTER OF EXPERTISE FOR MODELING, SIMULATION, AND ANALYSIS OF AERONAUTICAL SYSTEMS




# Update on Joint Modeling and Simulation System (J-MASS)

## 1 May 1996

**Dr Jerry Arnett**
**ASC/XRJ**
**J-MASS Program Mgr**
**DSN 785-3969 FAX 3682**
**Comm. (513) 255-3969**
**arnettjb@rerw.wpafb.af.mil**




# Background

- **AF 4-Star Summit on M&S endorsed J-MASS, June 1995**
- **Dr. Pat Sanders, Dep. Dir., Model & Simulation/Software Evaluation , Memo, dtd 7 Sep. 95**
- **Dr. Paul G. Kaminski, Under Secretary of Defense, Acquisition and Technology, Memo, dtd 14 Nov 95**




# J-MASS Features

- Based on an open systems architecture emphasizing flexibility, commonality, model reuse and interoperability for the acquisition and T&E communities
- Modular/object oriented design for models & model components
- Designed to exploit modern visual programming techniques
- Supports "Plug-and-Play" model object interaction
- Systems Software Specification developed by a tri-Service committee




# PMD Direction

## HQ AF/TE dated 28 Feb 1995

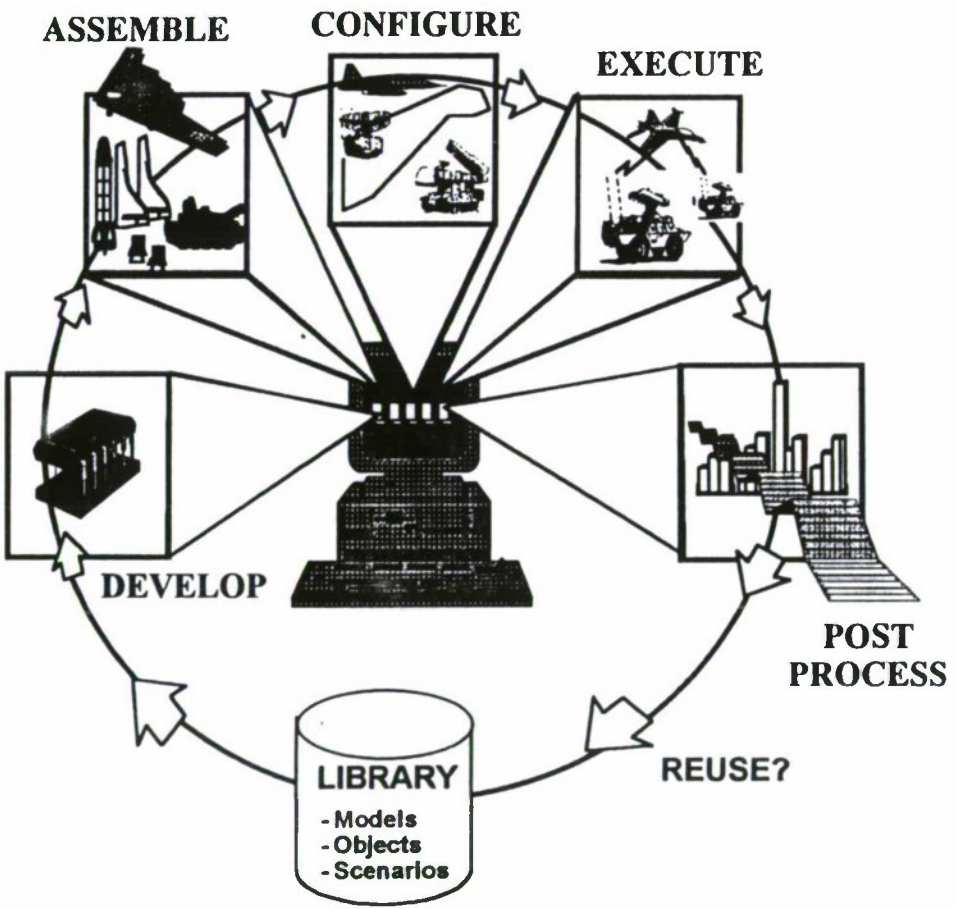
- Develop, deliver, and support a software system and tools which implement the J-MASS architecture
- Object-based technology
- Multi - Language
  - Near Term Ada and C++
- Interoperable Models
- Varying Levels of Detail
- Various Levels of Simulation
  - Mission Level thru Engineering

# J-MASS Functional Objectives

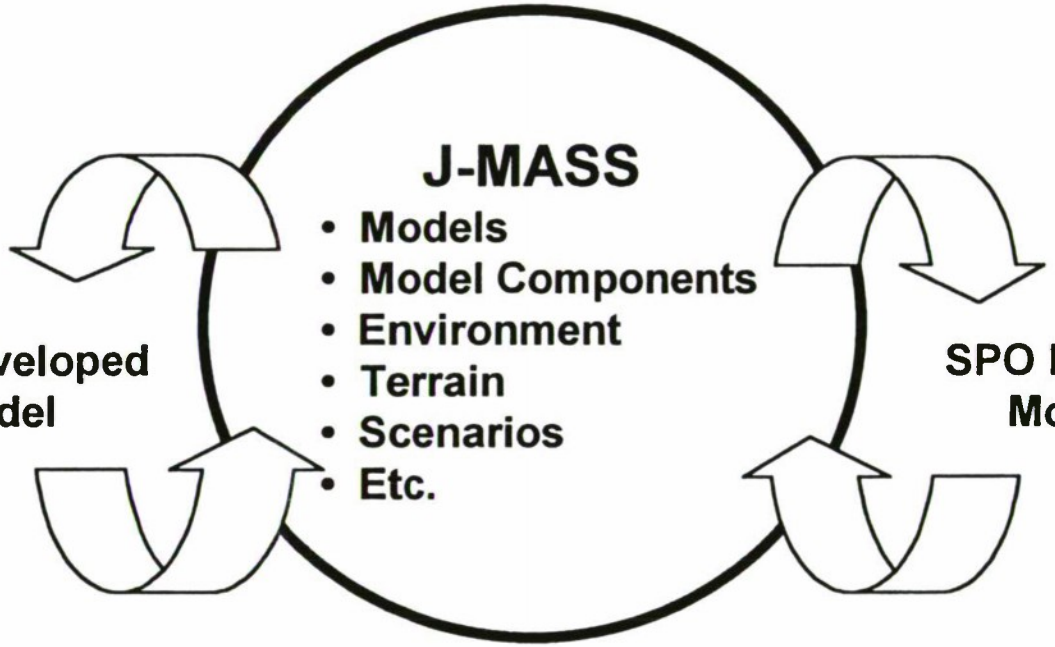
## Modeling and Simulation System to:

- Provide analysts and modelers with tools to do their job
- Provide a modeling and simulation reuse library (MSRL) to help locate and distribute models and model components
- Provide operational support in system operation, model development, software maintenance and testing

## System Concept



# How It Will Be Used




- J-MASS compliant Threat Model
- Pointer in J-MASS library directs user to intelligence center POC for model.
- Documentation tells appropriate use for the model & VV&A status

- J-MASS compliant DSM
- DSMs can often be built from "objects" available from the J-MASS library
- Documentation tells appropriate use for the model & VV&A status

- DSMs will "play" with J-MASS compliant threats in J-MASS simulations




# Benefits of Using J-MASS

- Simulation objects mimic real world objects
- Decreased model development time
- General model structure is now visual
  - Makes it possible to visually verify correctness of structure
- Standard interfaces to increase reusability
  - Allows plug replaceability of model components
- Library of models and model components
- Field extensibility allows site-developed tools to be incorporated
- Operational support, training & user documentation




# Development Status

- Release Summary
  - First Operational Release of J-MASS
    - Release 3.0
    - Distribution initiated 11 March 96
  - Release 3.0a Distribution expected May 96
  - Release 3.0b Distribution expected Sep 96




# J-MASS Information

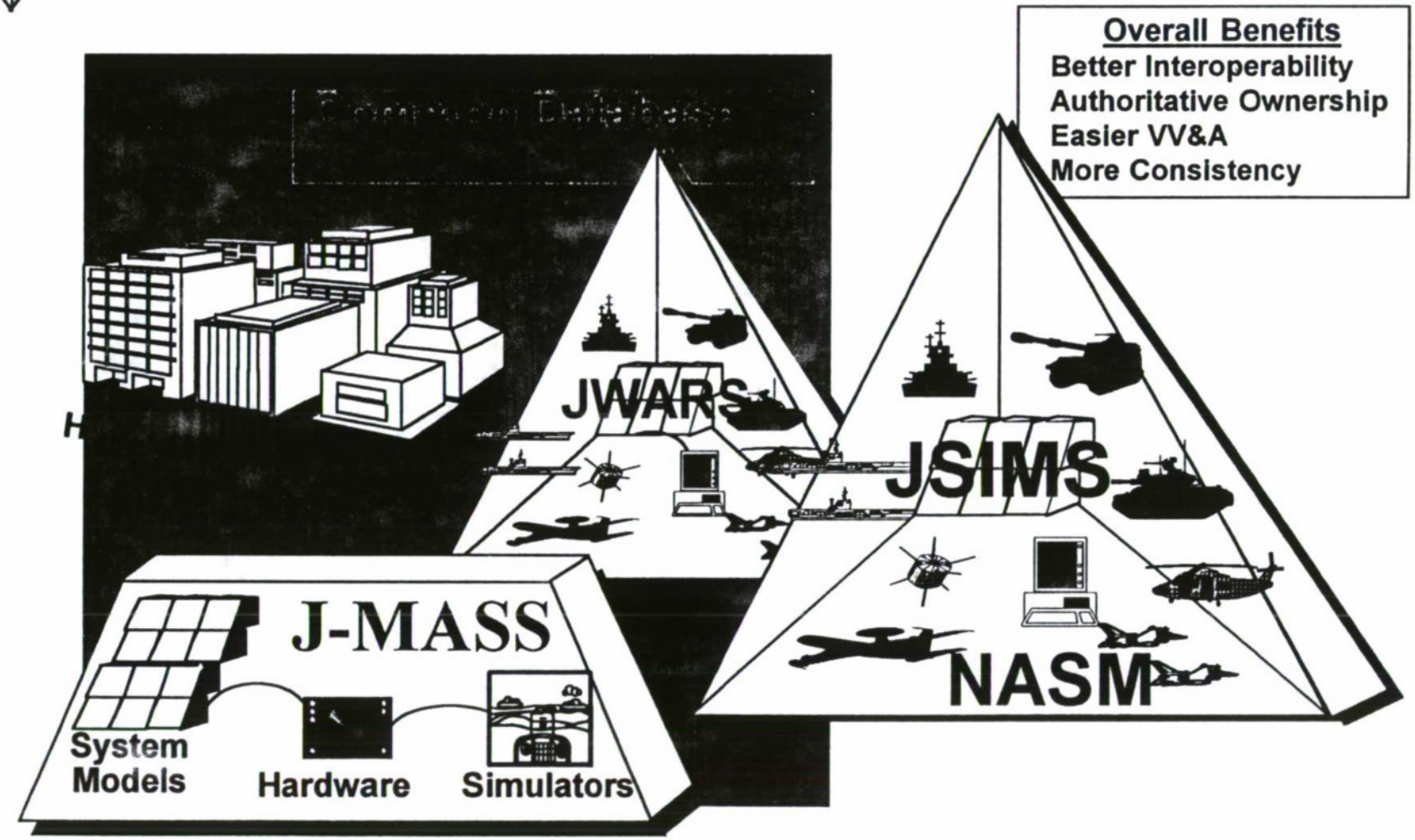
- **Visit J-MASS on the web:**
  **http://www.jmass.wpafb.af.mil**

- **For additional information contact:**
  **Mike Hucul**
  **Ph: (513) 255-3969, Ext. 3080**
  **Fax: (513) 255-3682**
  **E-mail: huculmp@rerw.wpafb.af.mil**




# Backup

# Air Force Standard Modeling & Simulation Architecture

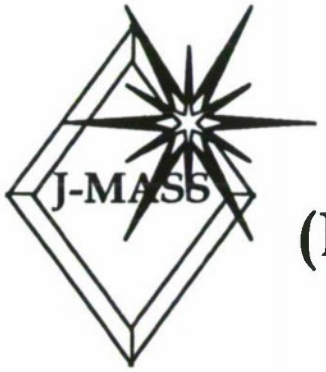





# OSD T&E Memo

## (Dr. Pat Sanders, Dep. Dir., Model & Simulation/Software Evaluation , dtd 7 Sep. 95)

- DoD invested significant funds in software architecture development
- Essential at this time for community to build on effort
  - Further development of MSIC++ halted, capabilities incorporated in J-MASS 3.0
  - Future models developed for EMD and T&E built to J-MASS architecture
  - VV&A of all models will be accomplished
- Near-term objectives:
  - Establish Joint Program Office
  - Form Senior Steering Group (General/Flag Officer or SES level)




# OSD Letter to HQ USAF/TE

## (Dr. Paul G. Kaminski, Under Secretary of Defense, Acquisition and Technology, dtd 14 Nov 95)

- Firmly believe that M&S should be an integral part of development and T&E. Key factor to reduce cycle time and manage acquisition risks
- In order to facilitate interoperability and affordability need:
  - Common Standards, Interfaces, & Infrastructure Environment
- J-MASS serves as such a simulation environment
- Standard, credible digital representations of threat systems as well as suitable digital system models of the weapon systems being acquired are non-negotiable requirements for acquisition community.
  - Produce J-MASS compatible representation of system




# J-MASS Capability

## Release 3.0

- Model Component Development Tool (MCDT) improved to support C++ & Ada
- Single C++ / Ada Automated Code Generator
- Configuration Tools Improved / Expanded
- Graphical Scenario Generation
- Graphical Execution Monitoring
- Additional Post Processing Tools




# J-MASS Capability

## Release 3.0 (cont.)

- Batch Processing - Experiment Manager (p)
- Documentation of all Modified Code
- Commercial Quality User's Manuals
- Complete System Testing and Test Models
- Supported on Sun with Solaris 2.4 - Mar 96
- Supported on SGI with IRIX 5.4 - May 96

(p) - partial capability




# J-MASS Capability

## Release 3.0a

- Models built in 3.0 upward compatible to 3.0a
- Supports distributed processing on SUN computers
- Model Simulation Reuse Library activation and support
- Initial IR model capability
- Reverse Engineering Tool to support JMASS 2.0 (Ada)




# J-MASS Capability

## Release 3.0a (cont.)

- Batch Processing - Experiment Manager, Ada and C++
- Additional batch processing tool (FAST), Ada and C++
- Field Extensibility for tools (p)
- Operational support
- User manual updates and training

(p) - partial capability




# J-MASS Capability

## Release 3.0b

- Models built in 3.0/3.0a upward compatible to 3.0b
- Terrain Masking (WGS84 & DTED Terrain)
- Distributed / heterogeneous Ada/C++ simulation
- C++ Simulation Controller (No Ada code)
- Common Journal Files
- Support key DIS 2.0 PDUs

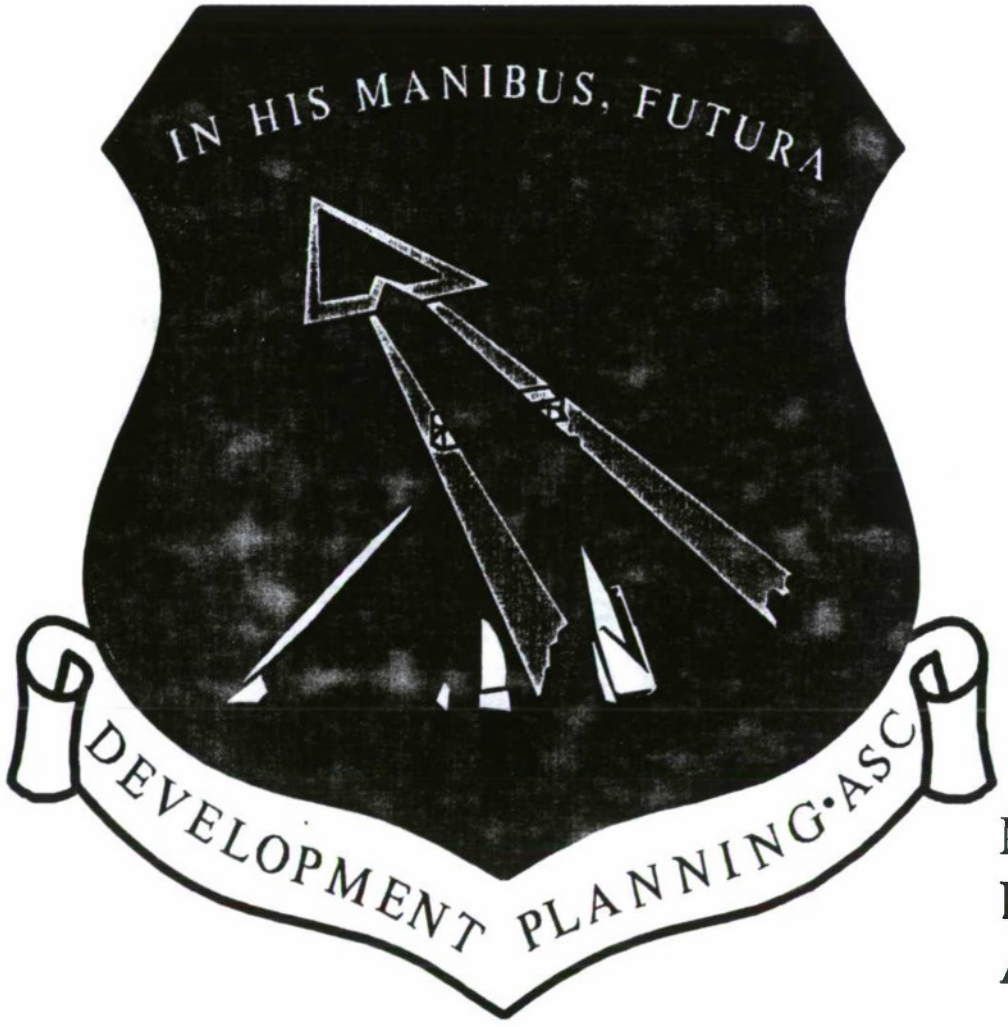



# J-MASS Capability

## Release 3.0b (cont.)

- Improvements to Model Development Tool
- Reverse Engineering Tool (Ada and C++)
- Player Association Tool ( graphically connect players to form teams/simulations)
- Field Extensibility
- Common SUN and SGI Load

# Industry and the TPIPT Process




Has some fall out money? $150K??

Mr. John Griffin, SES
Director
ASC Development Planning

# Overview

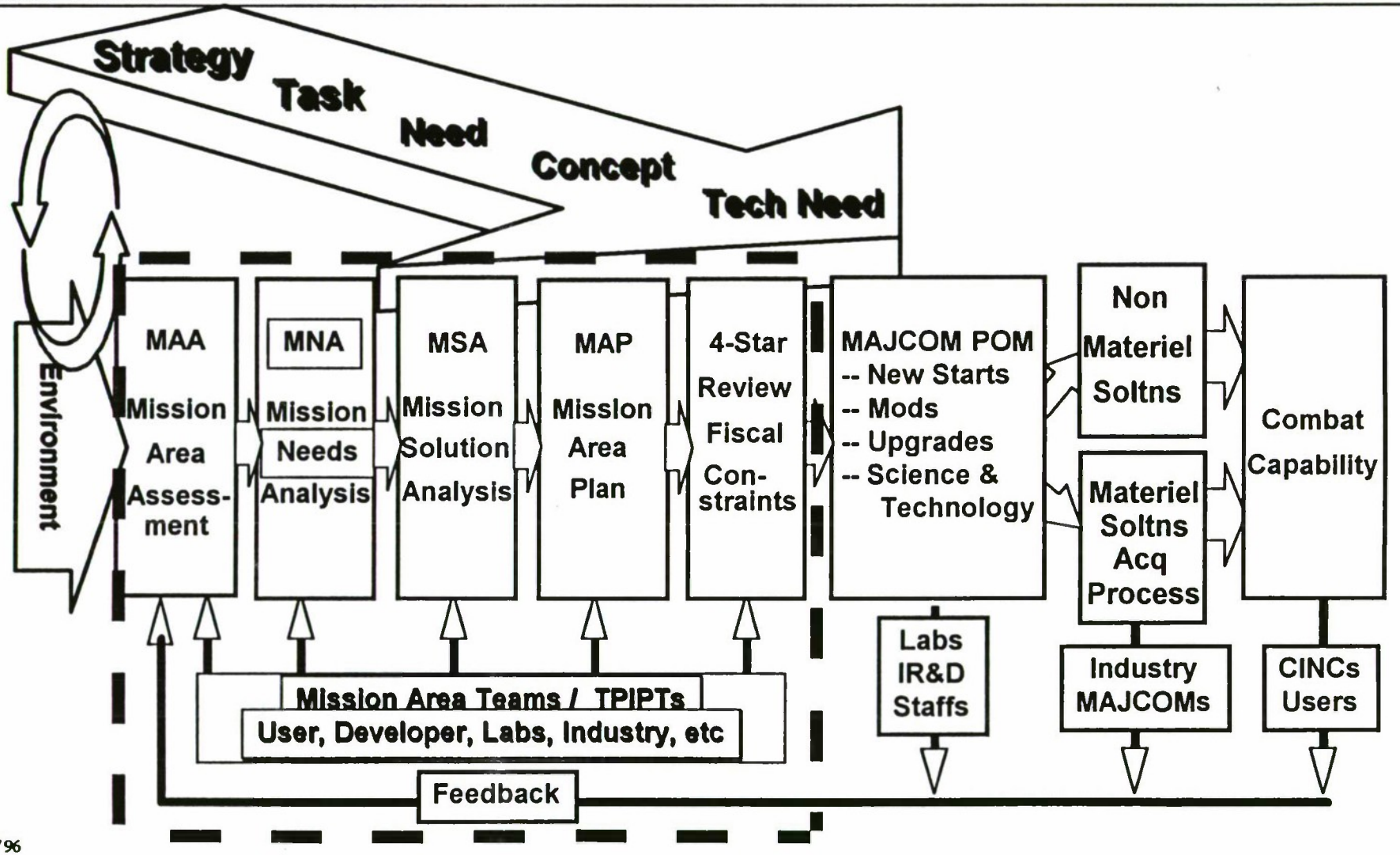
- Modernization Planning Process
  - What
  - Who
  - How - specifically how TPIPTs fit into plan
  - Schedule
  - Additional Information
  - Summary

# Revolutionizing Training

- Possible Changes in Philosophy and Training Paradigm
- Desire to Exploit Current and Future Technologies
- Expand Joint Service Capability

**WE WANT INDUSTRY'S HELP!**

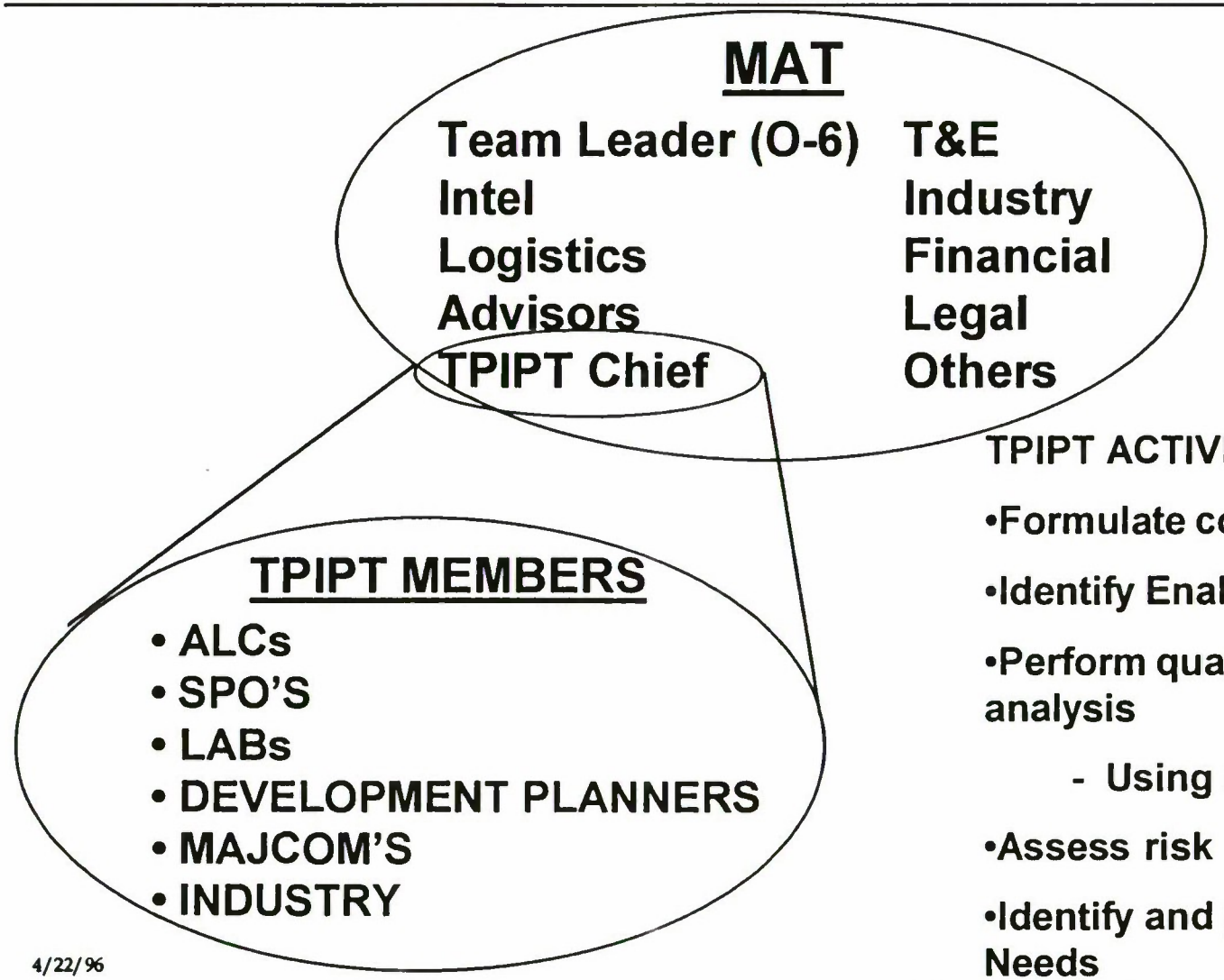
# MODERNIZATION PLANNING PROCESS FLOW



# STRATEGY-TO-TECHNOLOGY METHODOLOGY

- STRATEGY TO TASK (MISSION AREA ASSESSMENTS)
- TASK TO NEED (MISSION NEED ANALYSIS)
- NEED TO CONCEPT/SOLUTION (MISSION SOLUTION ANALYSIS)
- CONCEPT/SOLUTION TO TECHNOLOGY (TECHNOLOGY ASSESSMENT)

# TECHNICAL PLANNING INTEGRATED PRODUCT TEAM




TPIPT ACTIVITIES

- Formulate concepts/solutions
- Identify Enabling Technologies
- Perform quantitative/qualitative analysis
  - Using models and simulation
- Assess risk
- Identify and prioritize Technology Needs

# AFMC TPIPTs

## ASC

1 - AEROSPACE CONTROL

2- AIR-TO-SURFACE

3 - SPECIAL OPERATIONS

4 - MOBILITY

5 - AIRCREW TRAINING

6 - RESCUE

7 - AIR BASE SYSTEMS

8 - ELECTRONIC COMBAT

## HSC

1 - HUMAN SYSTEMS INTEGRATION

2 - ENVIRONMENTAL, SAFETY, & OCCUPATIONAL HEALTH

3 - OPERATIONAL MEDICAL SUPPORT

## SMC

1 - FORCE ENHANCEMENT

2 - SPACE CONTROL

3 - SPACE FORCES SUPPORT

4 - FORCE APPLICATION

5 - SPACE TRAINING

## ESC

1 - THEATER BATTLE MANAGEMENT

2 - RECCE/SURVEILLANCE/INTELL

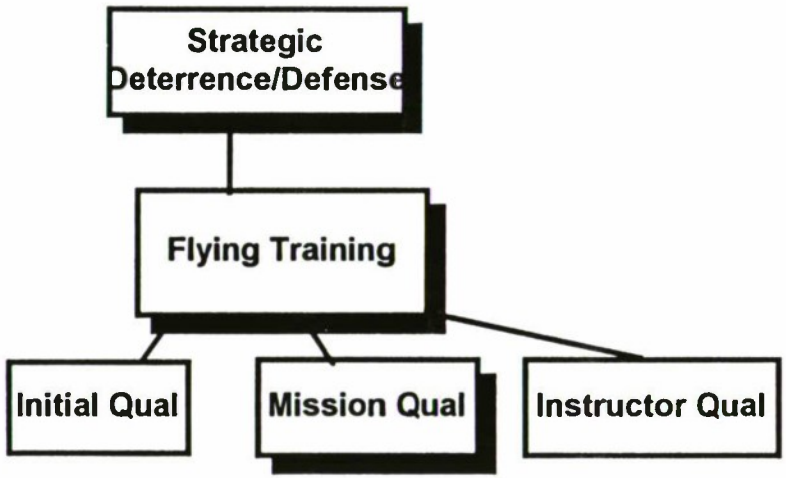
3 - STRATEGIC AIR DEFENSE

4 - MODELING/SIMULATION

5 - WEATHER

6 - INFORMATION WARFARE

# STRATEGY-TO-TASK



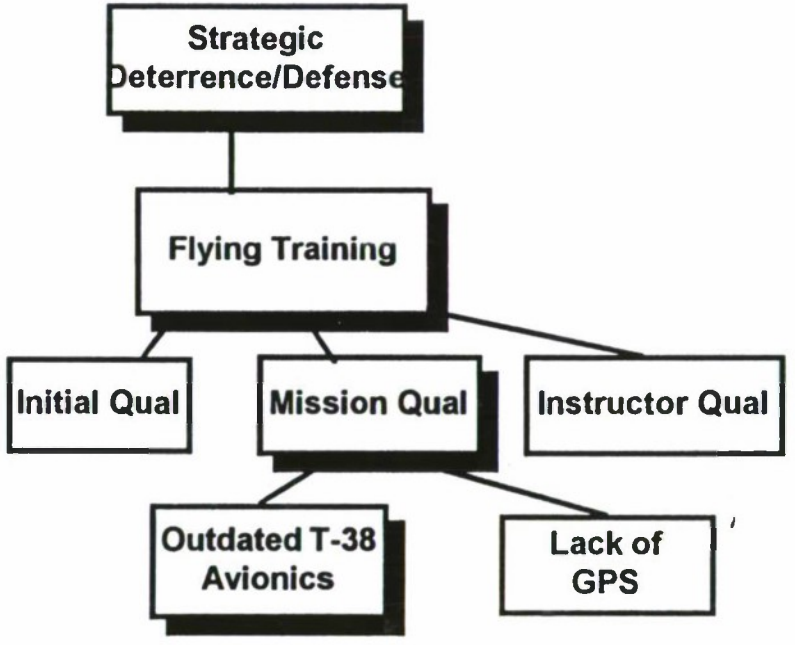

National Strategy

Mission Areas

MAA Tasks

INDUSTRY

# TASK-TO-NEED




National Strategy

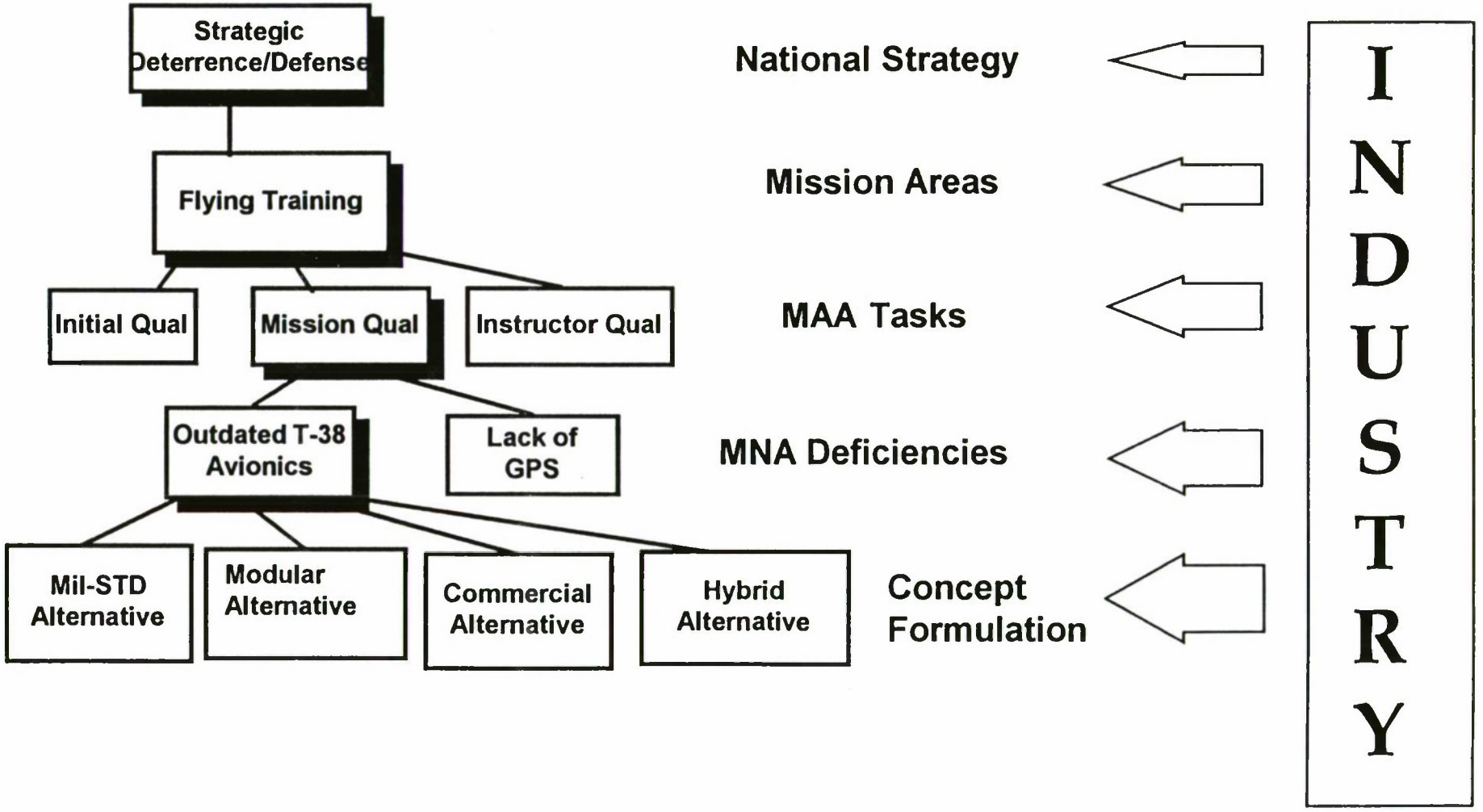
Mission Areas

MAA Tasks

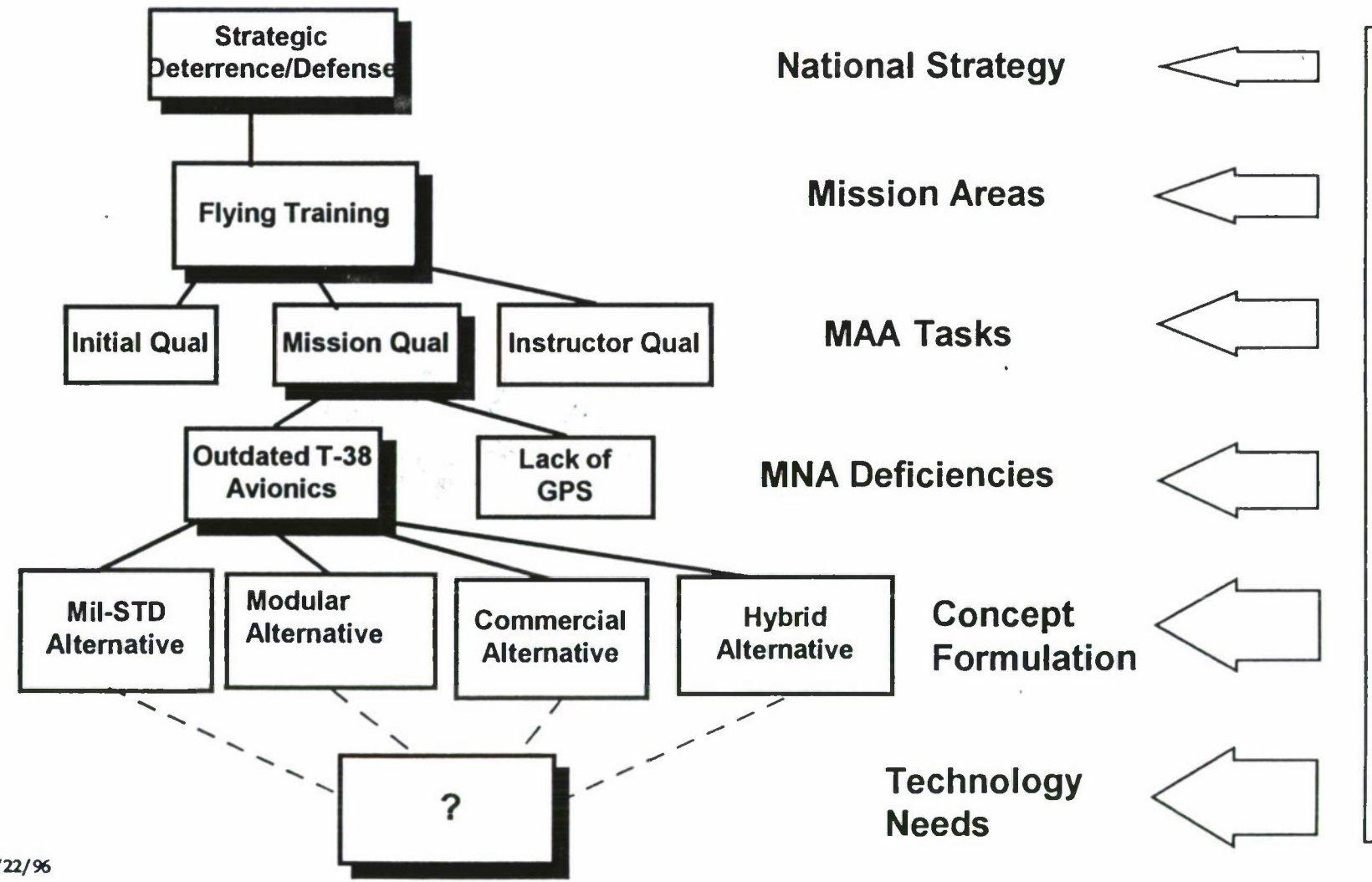
MNA Deficiencies

INDUSTRY

# DEFICIENCY-TO-CONCEPT



# CONCEPT-TO-TECHNOLOGY



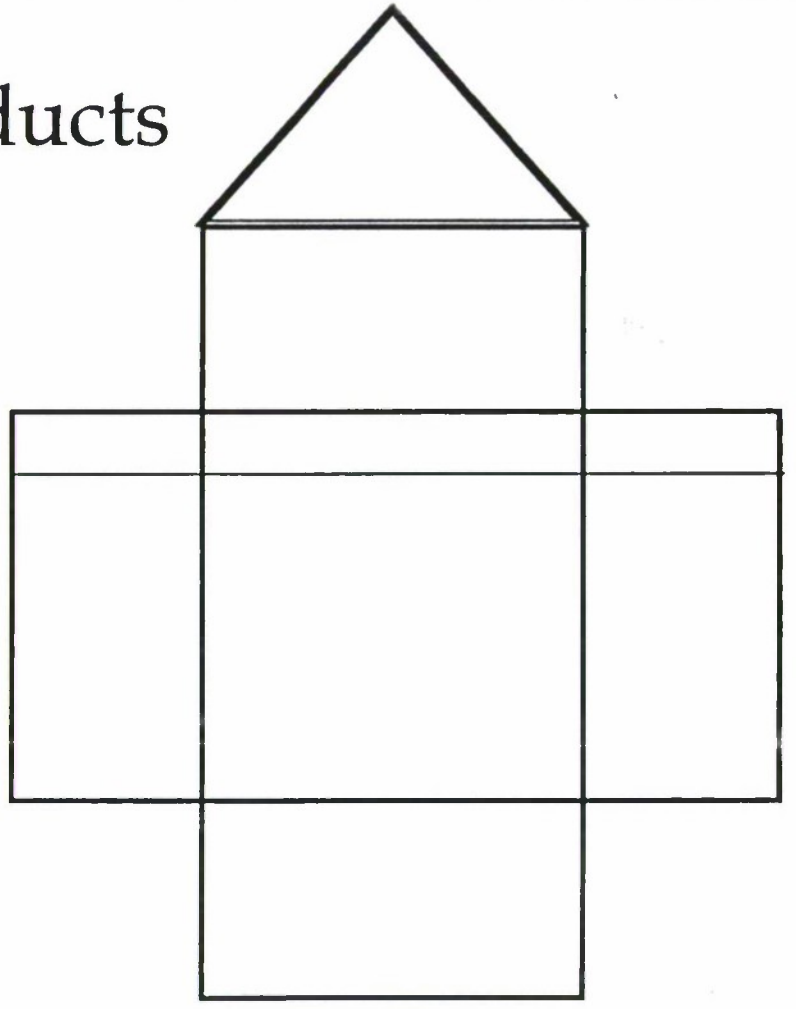
# ASC Call For Concepts

Via EMAIL. we need to get on this list.

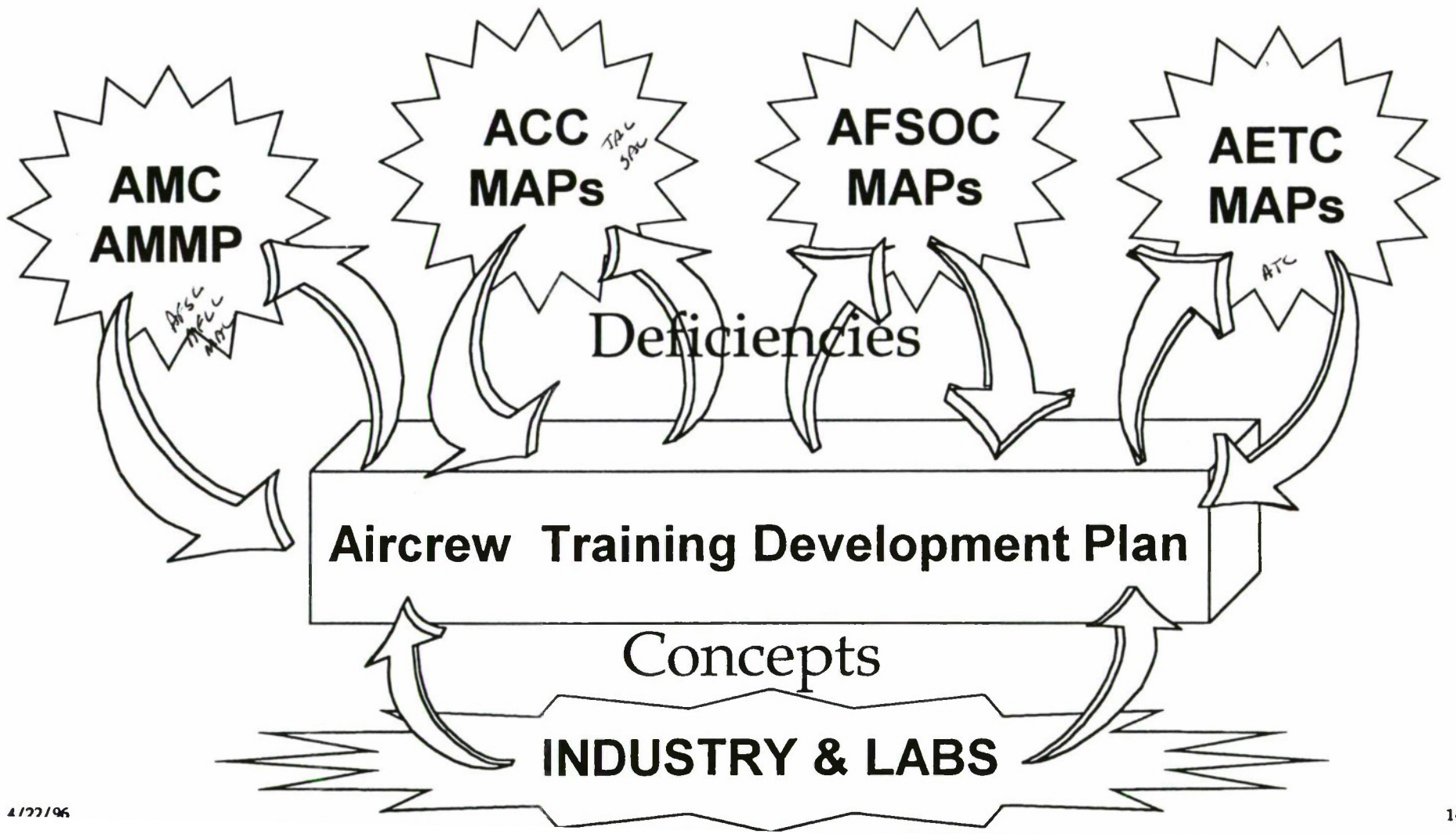
- CBD Announcement / Gov't Letter
- Distributed MAJCOM Deficiencies
- Reviewed Submitted Concepts
- Evaluated Concepts
- Transition Concepts
- Feedback to Industry
- Publish Development Plan

# Quality Function Deployment

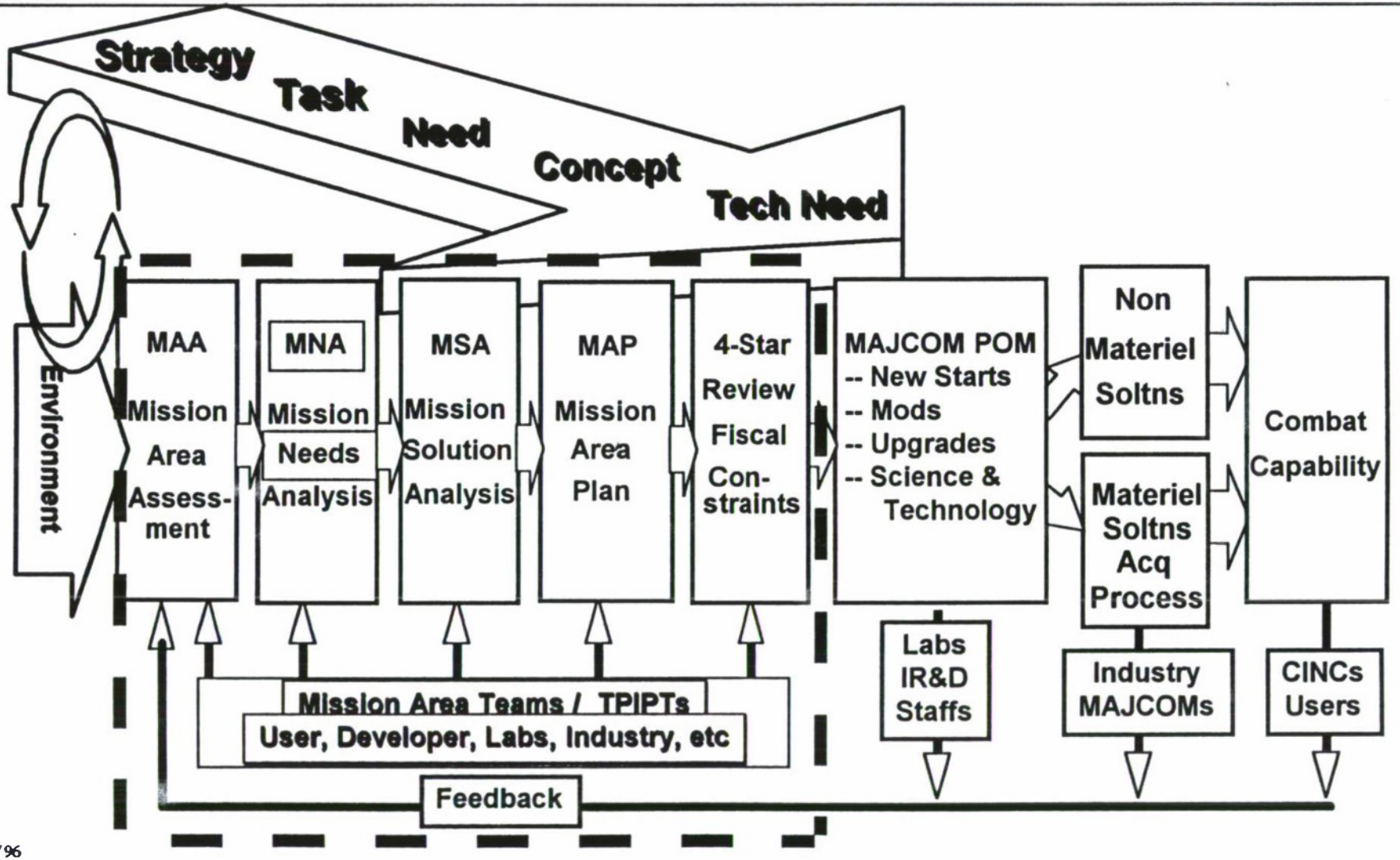
- House of Quality Products
  - Prioritized Concepts / Solutions
  - Traceable Documentation



# AF FLYING TRAINING DEFICIENCIES



# MODERNIZATION PLANNING PROCESS FLOW



# Senior Leadership Force Structure Planning

**Unconstrained**







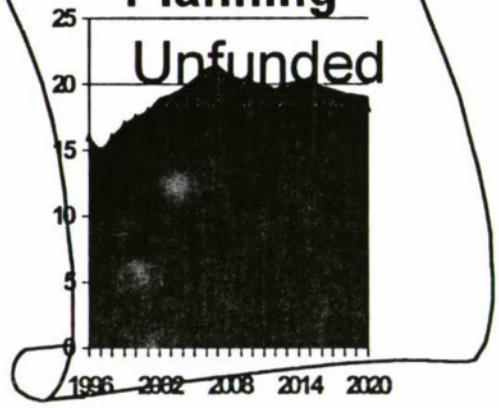


**Set of Preferred Options**

**Fiscal Constraints**

**Materiel Options**

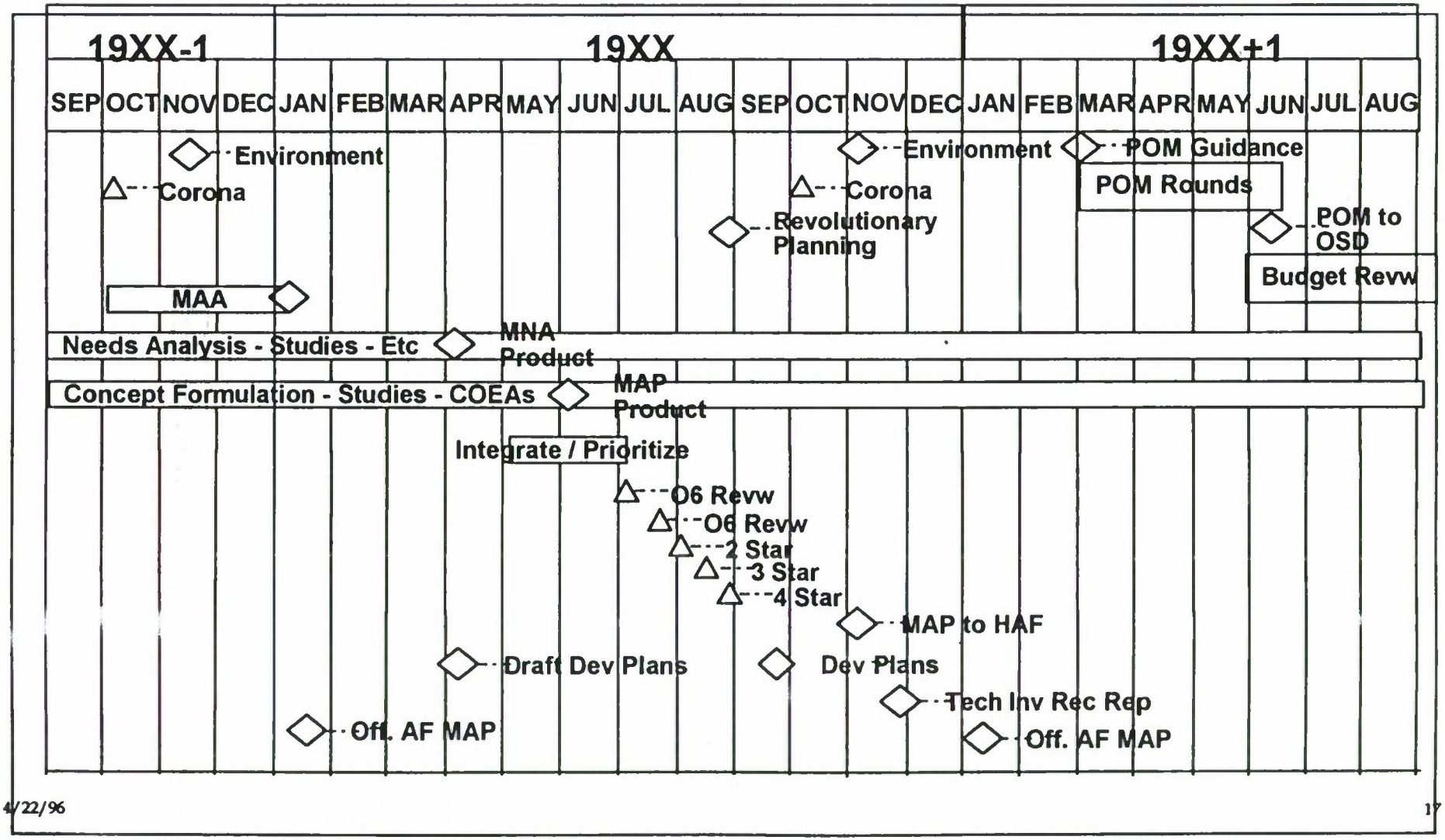
**Goal: Relevant Planning**




**Non-Materiel Options**

- *Force Structure*
- *Readiness*
- *Strategy*
- *Tactics*
- *Diplomacy*

# Modernization Planning Schedule



# Aircrew Training TPIPT


Lt Col Timothy Choate, Chief

Voice: Comm (513) 255-3124

DSN 785-3124

FAX: (513) 476-7889

E - Mail : ascxrt@ase.wpafb.af.mil

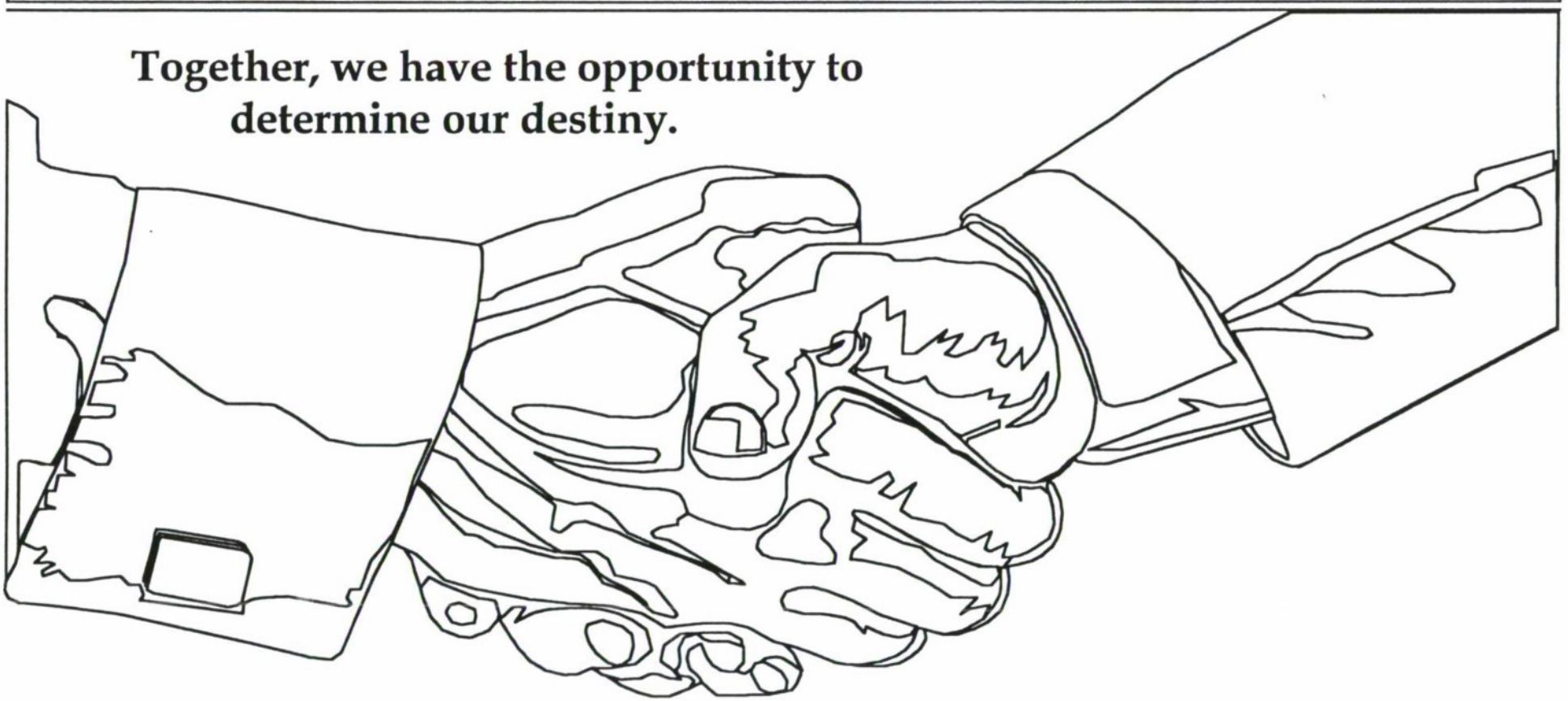

## Wright-Patt Homepage:

## http://www.wpafb.af.mil

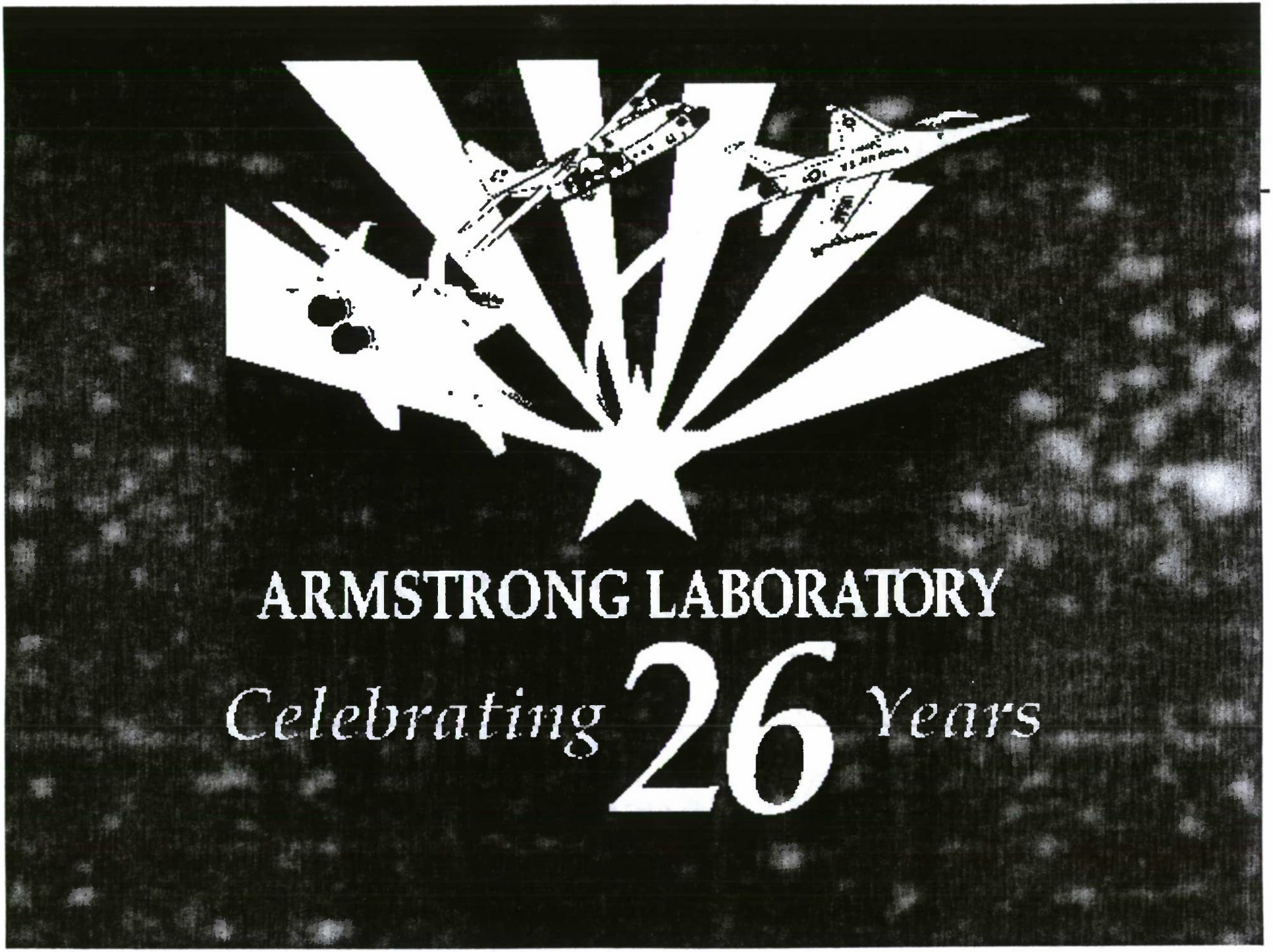
For Detailed information click on the hyper-text
"ASC Public Access Information"

# Modernization Planning Process

**Together, we have the opportunity to determine our destiny.**



## Future Planning is a Team Process!


ARMSTRONG LABORATORY
Celebrating 26 Years

# REVOLUTIONIZING TRAINING

## ADVANCE PLANNING BRIEFING
## TO
## INDUSTRY


ARMSTRONG LABORATORY

AIRCREW TRAINING RESEARCH DIVISION

COL LYNN CARROLL

# OVERVIEW

- REVOLUTIONIZING TRAINING PERSPECTIVE
- MAJOR R&D PLAYERS AND ACTIVITIES
- SPECTRUM OF R&D AREAS OF ACTIVITIES
- MAJOR CHALLENGES TO CREATING NEW MARKETS
- FUNDING CHALLENGES TO SUPPORT NEW MARKET
- MARKETING OPPORTUNITIES
- 50TH ANNIVERSARY OF THE AIR FORCE
- AL/HRA FOLLOW-ON CONTRACT
- SUMMARY

# PERSPECTIVE

- FOCUS MUST BE ON NATIONAL DEFENSE AND WARFARE
- PREPARATION FOR WARFARE DICTATES THAT PEACETIME OPERATIONS AT ALL LEVELS MUST BE INTEGRATED
- PEACETIME OPERATIONS MUST EQUAL WAR, FOR EVERYONE
- NOT ONLY MUST WARRIORS "TRAIN THE WAY WE INTEND TO FIGHT," BUT LEADERS MUST "LEAD THE WAY WE INTEND TO FIGHT," BUREAUCRATS MUST "MANAGE THE WAY WE INTEND TO FIGHT" AND INDUSTRY MUST "SUPPORT THE WAY WE INTEND TO FIGHT"
- THEN, REVOLUTIONIZING TRAINING CAN TAKE PLACE IN THE PROPER PERSPECTIVE AND WE CAN PROPERLY USE TECHNOLOGY FOR SOLUTIONS AND TO REDUCE COSTS

# MAJOR R&D PLAYERS

- TWO PRIMARY ASPECTS OF TRAINING R&D ARE - WARRIOR EFFECTIVENESS (HUMAN INTEGRATION) AND TECHNOLOGY DEVELOPMENT
- FOUR SUPER LABORATORIES - ARMSTRONG, PHILLIPS, ROME AND WRIGHT SUPPORT THOSE ASPECTS
- INDUSTRY IR&D AND ACADEMIA CONTRIBUTE SIGNIFICANTLY
- SUBSTANTIAL DEVELOPMENT OCCURS WITHIN ONGOING ACQUISITION AND SUSTAINMENT PROGRAMS
- INTEGRATED NATURE OF WARFARE REQUIRES A MORE INTEGRATED APPROACH TO TRAINING AND SUPPORTING R&D

# SPECTRUM OF R&D

- AFFORDABLE SYNTHETIC OPERATIONS ENVIRONMENTS
  - NEXT GENERATION, MULTI-SPECTRAL IMAGE GENERATORS
  - FULL FIDELITY, SURROGATE LEVEL WEAPON SYSTEMS
  - ELEGANT CUEING SYSTEMS
  - TARGET IDENTIFICATION AND MANEUVERING CAPABLE VISUALS
  - SECURE, LONG-HAUL NETWORKS
- DISTRIBUTED TRAINING USE AND EFFECTIVENESS
  - TRAINING GUIDELINES FOR USING DISTRIBUTED TRAINING
  - TRANSFER OF TRAINING STUDIES
  - SIMULATOR VERSUS WEAPON SYSTEM TRAINING COMPARISON
  - USER-FRIENDLY, DATA COLLECTION CONTROL/INSTRUCTOR STATIONS
- EMERGING AREAS OF INVESTMENT
  - SPACE, INFORMATION DOMINANCE, MAINTENANCE, INTELLIGENCE
  - UNINHABITED COMBAT AERIAL VEHICLES HUMAN FACTORS/TRAINING
  - NEXT GENERATION TRAINING SYSTEMS AS DECISION AIDS
  - INTELLIGENT TUTORS, AUTOMATED PERFORMANCE FEEDBACK SYSTEMS

# MAJOR CHALLENGES

- CHANGE THE AIR FORCE TRAINING PHILOSOPHY
- OVERCOME PREVIOUS DISAPPOINTMENTS WITH SIMULATORS
- FIND FUNDING TO REVOLUTIONIZE TRAINING
- ESTABLISH NEW MARKETS FOR TRAINING TECHNOLOGIES
- CREATE OPEN ENVIRONMENT FOR DEVELOPMENT AND REDUCE PROPRIETARY ASPECTS OF TRAINING SYSTEMS
- CHANGE ACQUISITION APPROACH AND USE TRAINING SYSTEM DEVELOPMENT TO ASSIST DECISION PROCESS
- GOVERNMENT AND INDUSTRY MUST TEAM TO REVOLUTIONIZE TRAINING IN THE AIR FORCE

# FUNDING CHALLENGES

- THERE COULD BE APPROXIMATELY $2-3B AVAILABLE IN THE AF OVER THE NEXT 5-10 YEARS TO REVOLUTIONIZE TRAINING
- ARMY DEMONSTRATED THAT FUNDING CAN BE FOUND
- TRAINING INDUSTRY WILL SEE NONE OF IT UNLESS THE AIR FORCE IS CONVINCED THAT:
  - REVOLUTIONIZING TRAINING IS THE RIGHT THING TO DO
  - INDUSTRY CAN DELIVER AN INTEGRATED SOLUTION (NOT JUST PIECES AND PARTS)
- HELP US MARKET THAT MESSAGE AS WELL AS PRODUCTS
- INDUSTRY SHOULD LOBBY FOR A TRAINING CZAR IN THE AF TO BE THE FOCAL POINT FOR TRAINING PHILOSOPHY, VISION, POLICY, COORDINATION, INTEGRATION AND TO CHAMPION TRAINING AND FUNDING

# MARKETING OPPORTUNITIES

- IF WE WORK TOGETHER, EVERY DAY IS A MARKETING OPPORTUNITY
- TRADE SHOWS SUCH AS I/ITSEC SHOULD HIGHLIGHT INTEGRATED APPLICATIONS, NOT JUST STAND ALONE PRODUCTS
- INDUSTRY SHOULD LOBBY LEADERSHIP TO CONVINCE THEM OF THE NEED FOR REVOLUTIONIZING TRAINING
- AIR FORCE MUST SHOW SINGLE FACE TO INDUSTRY TO ENSURE UNITY OF PURPOSE AND VISION IN TRAINING
- AFA SPONSORED 50TH ANNIVERSARY OF THE AIR FORCE

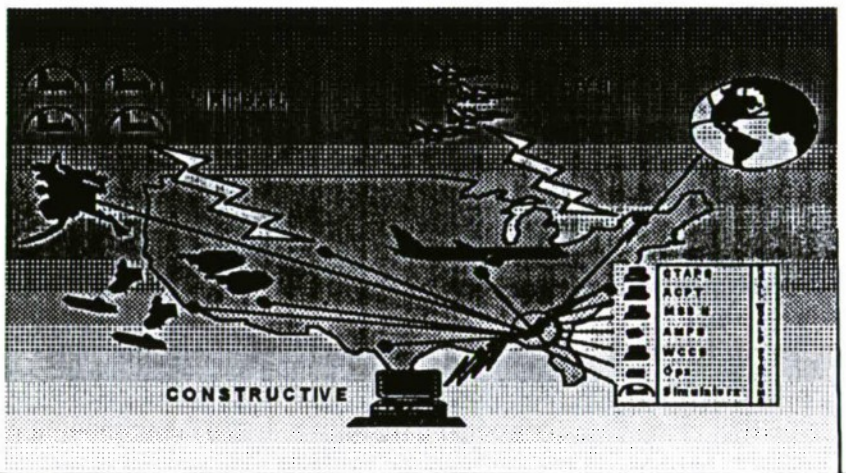
# AF 50TH ANNIVERSARY

- AFA SPONSORED ANNIVERSARY AT LAS VEGAS, 22-24 APR 97
- TRADE SHOW ENVIRONMENT ATTENDED BY ALL LEADERSHIP
- OPPORTUNITY TO SHOWCASE TRAINING TECHNOLOGIES AND APPLICATIONS IN AN INTEGRATED FORUM
- USE ADVANCED DISTRIBUTED SIMULATION TO BRING IN SITES FROM AROUND THE WORLD TO SHOWROOM FLOOR
- TAKE ADVANTAGE OF INDUSTRY/LAB COLLABORATIVE EFFORT TO BUILD 4-SHIP AS CENTERPIECE OF SHOW
- DEMONSTRATES INTEGRATED TRAINING CAPABILITIES TO MILITARY AND CIVILIAN LEADERSHIP AND DECISIONMAKERS
- DEMONSTRATES OUR ABILITY TO WORK TOGETHER

# AL/HRA FOLLOW-ON CONTRACT

- REVOLUTIONIZE TRAINING IN THE AIR FORCE
- CONTRACT POTENTIAL OF $200-300M OVER 7 YEARS
- EXPAND WARFIGHTER TRAINING R&D ENVIRONMENT
- CREATE WARFIGHTER TRAINING DECISION SUPPORT CENTER
- SUPPORT ACQUISITION, SUSTAINMENT AND MODERNIZATION PROGRAMS AND PROCESSES
- INTEGRATE LABORATORY INITIATIVES WITH OTHER LAB, INDUSTRY AND ACADEMIC PROGRAMS
- CONNECT "BELOW WING" WARFIGHTERS WITH "WING AND ABOVE" WARFIGHTERS FOR TOTALLY INTEGRATED SYSTEM

# REVOLUTIONIZING TRAINING IN THE AIR FORCE




OBJECTIVES:

- BASELINE - TRAINING THE WARFIGHTER
  - -- WARFIGHTER TRAINING EFFECTIVENESS
  - -- DISTRIBUTED MISSION TRAINING
  - -- NIGHT VISION GOGGLE TRAINING

- DEVELOP AND VALIDATE NEW TRAINING PHILOSOPHY
  - -- CREATE WARFIGHTER TRAINING DECISION SUPPORT CENTER
  - -- DEVELOP FUTURE WARFIGHTER TRAINING ENVIRONMENT
  - -- INTEGRATE WITH ALL LEVELS OF WARFIGHTER TRAINING
  - -- ESTABLISH UTILITY OF TRAINING ENVIRONMENT TO JTFCC
  - -- CONDUCT FLYING HOUR TRADEOFF & TRANSFER OF TRNG STUDIES

FUNDING ($M)

| PE | FY96 | FY97 | FY98-03 |
|---|---|---|---|
| TOTAL | 9.3 | 9.3 | ($200 - 300M POTENTIAL) |

SELECTED MAJOR MILESTONES:

FY98 - STANDUP WARFIGHTER TRAINING DECISION SUPPORT CENTER
- DEFINE FUNCTIONAL REQUIREMENTS

FY99 - PROTOTYPE UNIT TRAINING ENVIRONMENT (FACILITIES, TOOLS)
- CONDUCT TRAINING EFFECTIVENESS STUDIES (FY99-03)

FY00 - DEVELOP & INTEGRATE LIVE, VIRTUAL, CONSTRUCTIVE VENUES
- INTEGRATE UNIT TRAINING ENVIRONMENT WITH WING AND ABOVE FUNCTIONS

FY01 - INTEGRATE AND VALIDATE MODELS FOR "WAR IN A BOX"

FY02 - VALIDATE NEW TRAINING PHILOSOPHY

FY03 - DEVELOP AND VALIDATE HORIZONTAL OPTIMIZATION STRATEGY FOR CAREER TRAINING SPECTRUM
- TRANSITION PHILOSOPHY, TECHNOLOGIES, METHODS TO USERS

# SUMMARY

- INCREASING NEED FOR WARFIGHTER TRAINING R&D
- EXCELLENT POTENTIAL FOR EXPANDED TRAINING MARKETS
- OPPORTUNITIES ABOUND FOR COLLABORATIVE EFFORTS BETWEEN INDUSTRY AND LABORATORIES
- IF WE WORK TOGETHER, WE CAN CREATE NEW MARKETS FASTER THAN IF WE WORK SEPARATELY
- WE MUST SUPPORT AND NURTURE THE CONCEPT OF REVOLUTIONIZING TRAINING OR IT WON'T HAPPEN
- 50TH ANNIVERSARY AND TRADE SHOWS NEED INTEGRATED ACTIVITIES TO BUILD CONFIDENCE IN TRAINING SOLUTIONS

# Aircrew and Maintenance Training New Business

Advance Planning Briefing to Industry | Orlando FL 1 May 1996

Presentation not available at Press Time







# MANPOWER, PERSONNEL & TRAINING SYSTEMS: NEW BUSINESS

DR JEFFREY KANTOR
HUMAN SYSTEMS PROGRAM OFFICE
HUMAN SYSTEMS CENTER
BROOKS AFB, TEXAS

# BRIEFING TOPICS

HUMAN SYSTEMS CENTER

NEAR TERM PROGRAMS

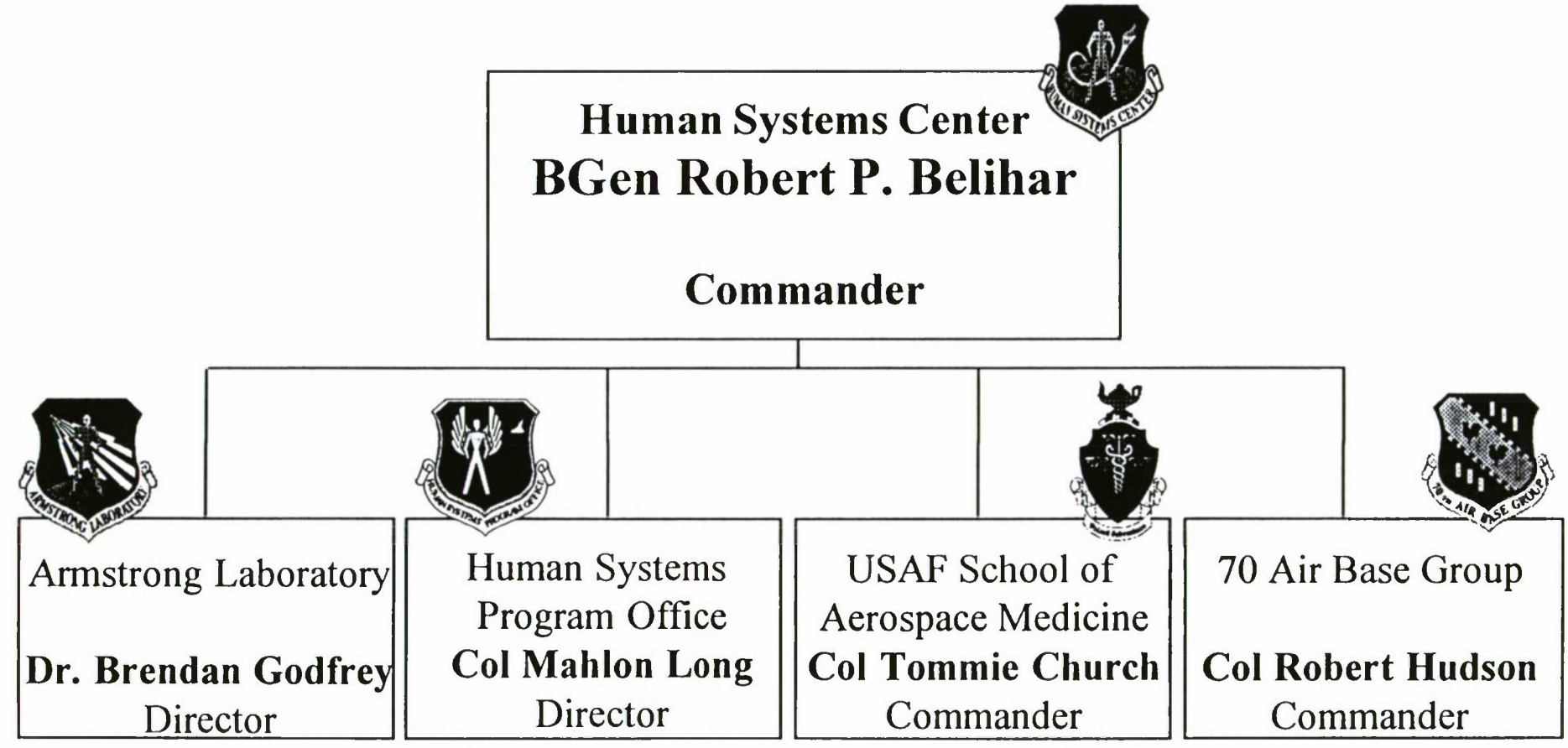
- INTELLIGENT TUTOR SYSTEMS
- INTEGRATED RESOURCE REQUIREMENTS MODEL

FAR TERM PROGRAM

- GLOBAL TRAINING NETWORK

FUTURE DIRECTIONS

# HUMAN SYSTEMS CENTER: MAJOR UNITS



# HUMAN SYSTEMS PROGRAM OFFICE
# MISSION

ENGINEERING & MANUFACTURING DEVELOPMENT, PRODUCTION, AND SUSTAINMENT OF

- INTELLIGENT TUTORING & TNG MGT SYSTEMS
- LIFE SUPPORT SYSTEMS
- CHEMICAL BIOLOGICAL DEFENSE SYSTEMS
- AEROMEDICAL SYSTEMS
- ENVIRONMENTAL QUAL SYSTEMS
- DESIGN AND TEST OF AIR FORCE UNIFORMS

BROAD CUSTOMER BASE

- ALL MAJCOMs & AIR STAFF
- OTHER PRODUCT CENTERS
- OTHER US GOVERNMENT AGENCIES
- FOREIGN COUNTRIES




# WHAT IS AN INTELLIGENT TUTOR?

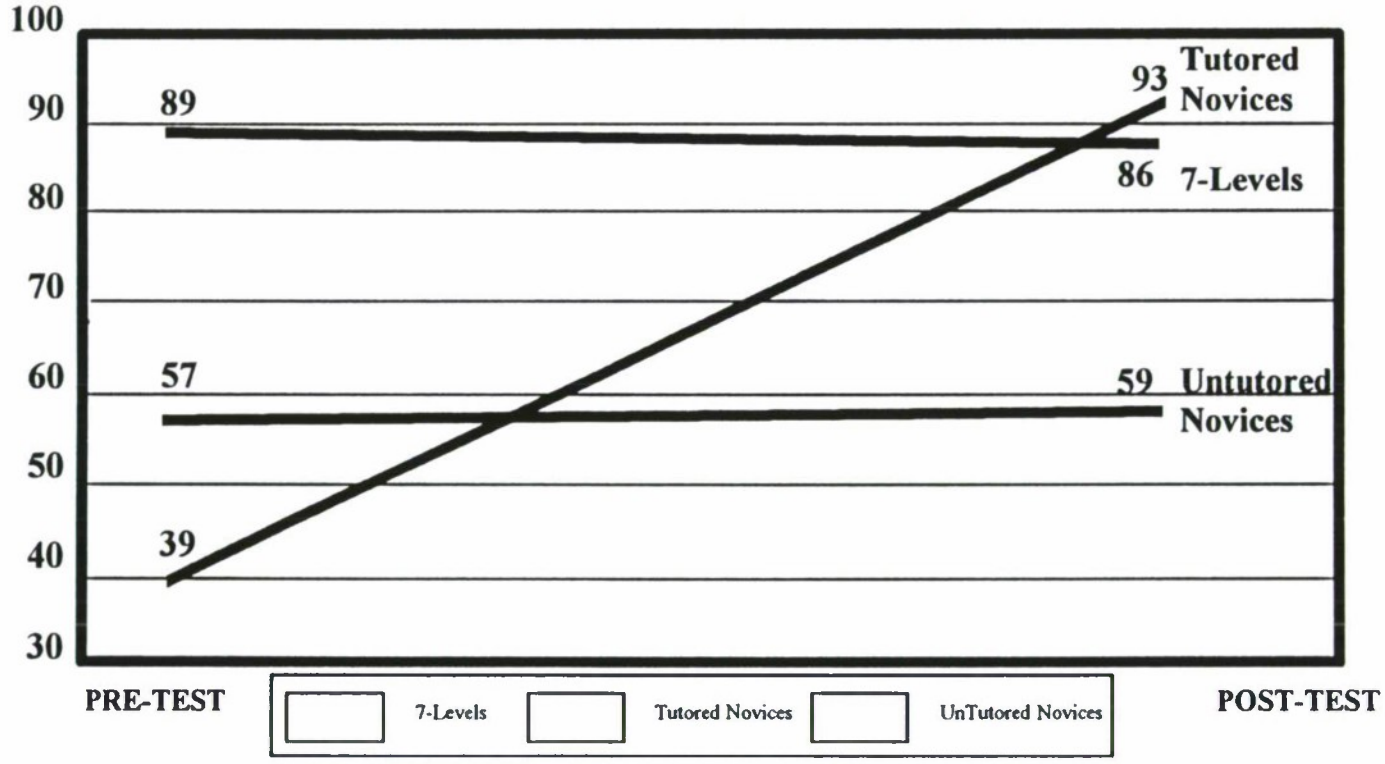



A MODEL OF HUMAN THINKING AND LEARNING

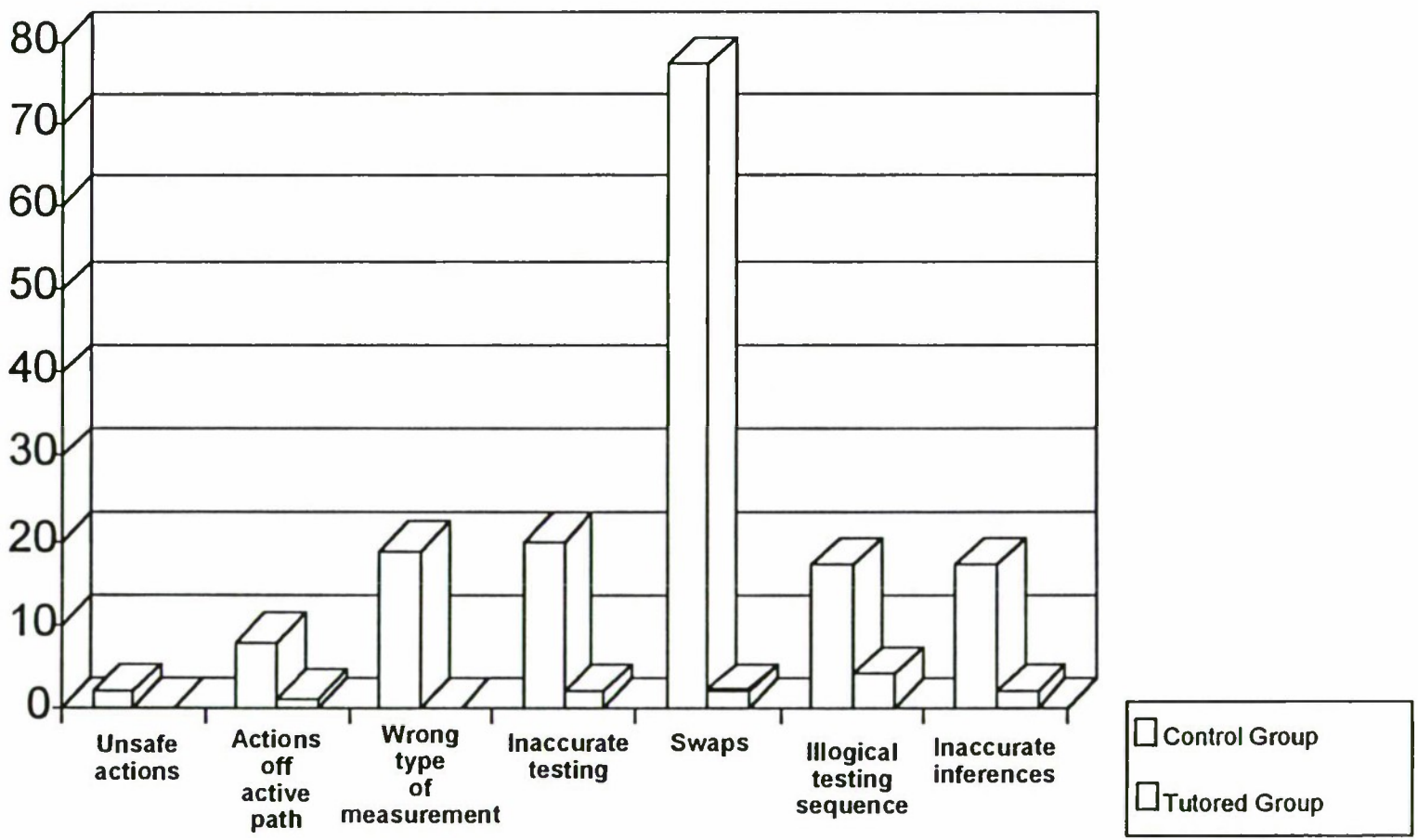
EVOLUTIONARY STEP FORWARD IN COMPUTER BASED TRAINING

- TEACHES STRATEGIES NOT PROCEDURES
- INCORPORATES REAL WORLD EXPERTISE
- PRESENTS PROBLEMS IN A REALISTIC SIMULATION
- USES ARTIFICIAL INTELLIGENCE TO GIVE EACH STUDENT PERSONALIZED INSTRUCTION

# FIELD TEST RESULTS
# AVIONICS TROUBLESHOOTING TUTOR



# VIOLATIONS OF EXPERT STRATEGIES



# EXAMPLE PROGRAMS

| PROGRAM | APPLICATION |
| --- | --- |
| • COMBAT AIR FORCES | F-15/16 SYSTEMS TROUBLESHOOTING |
| • AIR INTELLIGENCE AGENCY | TACTICAL INFO BROADCAST SYSTEM |
| • AIR FORCE SPECIAL OPERATIONS COMMAND | AN/APQ 158 TF/TA RADAR |

# INTELLIGENT TUTOR PROGRAM

CONTRACTING APPROACH

- RFP RELEASE: FY96
- TYPE CONTRACT: IDIQ / CPAF
- SIZE: $24M

FUNDING STATUS: GOOD

POC: CAPT HOLLY FUNK (E-MAIL: FUNKH@DIAMOND.BROOKS.AF.MIL)

ADD'L INFO: HTTP://WWW.BROOKS.AF.MIL/

- SAN ANTONIO RFP & ACQUISITION HIGHWAY (SARAH)

# INTEGRATED RESOURCE REQUIREMENTS MODEL (IRRM)

FORECASTS FLYING TRAINING REQUIREMENTS IN SUPPORT OF AETC MODERNIZATION MASTER PLAN

- 5-10 YEAR LOOK AHEAD VS CURRENT 2 YR LOOK
- NUMBER OF AIRCRAFT, SIMULATORS, CLASSROOMS, INSTRUCTORS
- OTHER BASE INFRASTRUCTURE (E.G. DORMITORIES, AIRSPACE)

INTEGRATES MODELING / SIMULATION OF

- FUTURE FORCE STRUCTURE
- FUTURE PERSONNEL STRUCTURE
- FUTURE ACCESSION AND TRAINING REQUIREMENTS
- CURRENT INFRASTRUCTURE AND CAPACITY

# IRRM

CONTRACTING APPROACH

- RFP RELEASE: FY97
- TYPE CONTRACT: TBD
- SIZE: <$5M

FUNDING STATUS: GOOD

POC: MR JOSE MARTINEZ
(E-MAIL: MARTINEZ@DIAMOND.BROOKS.AF.MIL)

# FAR TERM PROGRAM: GLOBAL TRAINING NETWORK

PROVIDES TRAINING-ON-DEMAND, ANYTIME, ANYWHERE

- FULL RANGE OF TRAINING CAPABILITIES AT JOB SITE
  - UPGRADE, CONTINUATION & ANCILLARY
- TRAINING DELIVERY AND LIFE CYCLE MANAGEMENT

CAPITALIZE ON COMMERCIAL COMMUNICATION TECHNOLOGIES

SUPPORTS TOTAL FORCE TRAINING NEEDS

CONTRACTING APPROACH

- RFP RELEASE: FY99
- SIZE: $10 - 20M

FUNDING BEING WORKED

POC: LT COL ZLOTKOWSKI (E-MAIL: ZLOTKOWJ@DIAMOND.BROOKS.AF.MIL)

# FUTURE DIRECTIONS

INTELLIGENT TRAINING AUTHORING PACKAGES

EMBEDDED INTELLIGENT TRAINING SYSTEMS

COGNITIVE BASED TRAINING DEVELOPMENT

# Lt Col Greg Kuntz
# System Program Director
# Air Combat Training Systems
# ASC/VXC
# 102 West D Ave, Suite 300
# Eglin AFB FL 32542-6808
# kuntz@eglin.af.mil
# 904-882-9391, Ext 5003

# AIR COMBAT TRAINING SYSTEMS

## FAMILY OF PROGRAMS IN WHICH ELECTRONICS EQUIPMENT IS PROCURED TO PROVIDE MONITOR AND DEBRIEF CAPABILITY FOR AIR-TO-AIR AND AIR-TO-GROUND COMBAT TRAINING EXERCISES FOR THE WARFIGHTERS/USERS

# ASC/VXC PROGRAMS

- YUKON MEASUREMENT DEBRIEFING SYSTEM
- P4B PODS
- NELLIS AIR COMBAT TRAINING SYSTEM/TYNDALL RANGE EXPANSION (NACTS/TRE)
- KOREA (FMS)
- EGYPT (FMS)
- ADVANCED MESSAGE ORIENTED DATA SECURITY SYSTEM (AMODSM)
- ALPENA
- DECIMOMANNU
- ADVANCED DISPLAY AND DEBRIEFING SYSTEM (ADDS)
- TYNDALL MEASUREMENT AND DEBRIEFING SYSTEM
- RANGE AIRSPACE MANAGEMENT SYSTEM (RAMS)
- AIRCRAFT COMPATIBILITY UPGRADE (ACU)
- NATIONAL TRAINING CENTER/AIR WARRIOR UPGRADE
- JOINT TACTICAL COMBAT TRAINING SYSTEM (JTCTS)
- THREATS
  - MINI-MUTES
  - GROUND JAMMER
- GOLDWATER RANGE MEASUREMENT AND DEBRIEFING SYSTEM
- KADENA INTERIM TRAINING SYSTEM (KITS)

# AIR WARRIOR UPGRADE (AWU)

PROG MGR: Mr. Tim Douglas
ORG: ASC/VXC
PHONE: DSN 872-9391/x5038

## GENERAL

DESCRIPTION

THE AWU WILL INTEGRATE THE AIR WARRIOR MEASUREMENT AND DEBRIEFING SYSTEM (AWMDS) WITH THE NATIONAL TRAINING CENTER INSTRUMENTATION SYSTEM (NTC-IS). CURRENTLY THE AWMDS IS LIMITED TO PROCESSING AND DISPLAYING 700 GROUND PARTICIPANTS WHILE THE NTC-IS HAS THE CAPABILITY OF DISPLAYING UP TO 2000 GROUND PARTICIPANTS. THE AWU SHALL PROVIDE THE AWMDS THE 2000 GROUND PARTICIPANT PROCESSING AND DISPLAY CAPABILITY.




## REQUIREMENTS

- O UPGRADE EXISTING HARDWARE AND SOFTWARE TO PROVIDE CAPABILITY OF DISPLAYING 2000 INSTRUMENTED GROUND PARTICIPANTS.
- O UPGRADE THE EXISTING COMMUNICATIONS LINKS TO ACCOMODATE TRANSFER OF DATA FOR UP TO 2000 GROUND PARTICIPANTS.
- O UPGRADE THE COMPUTER SYSTEM TO AN OPEN ARCHITECTURE DESIGN.
- O ENSURE THAT THE UPGRADE IS DIS COMPLIANT.

## SCHEDULE

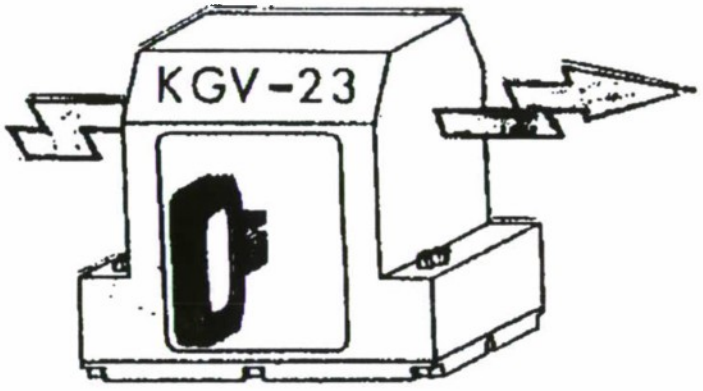
| | |
|---|---|
| O RELEASE DRFP | 28 JUN 96 |
| O RELEASE RFP | 01 OCT 96 |
| O RECEIVE PROPOSALS | 31 OCT 96 |
| O CONTRACT AWARD | 14 FEB 97 |

# INTEGRATION OF AMODSM INTO AIR COMBAT TRAINING RANGES

PROG MGR: Bobby Tapley
ORG: ASC/VXC
PHONE: DSN 872-9391
EXT 5065

## PROGRAM DESCRIPTION

AMODSM IS AN ENCRYPTION/DECRYPTION DEVICE WHICH WILL PROVIDE ENCRYPTION OF TELEMENTRY DATA FOR AIR COMBAT TRAININGS RANGES




## REQUIREMENTS

INTEGRATION OF AMODSM INTO AN ESTIMATED 650 PODS AND NINE GROUND SYSTEMS FOR EXISTING USAF AIR COMBAT TRAINING RANGES

## SCHEDULE

| | |
|---|---|
| ENGR DEV CONTRACT AWARD | 14 JUN 95 |
| EDMs UNITS | DEC 96 |
| PRODUCTION UNITS | OCT 97 |
| RELEASE INTEGRATION RFP | 3RD QTR FY 97 |
| CONTRACT AWARD | 1ST QTR FY 98 |

PE: 0604735F/010897F
PROJ: 3320
28 Mar 96

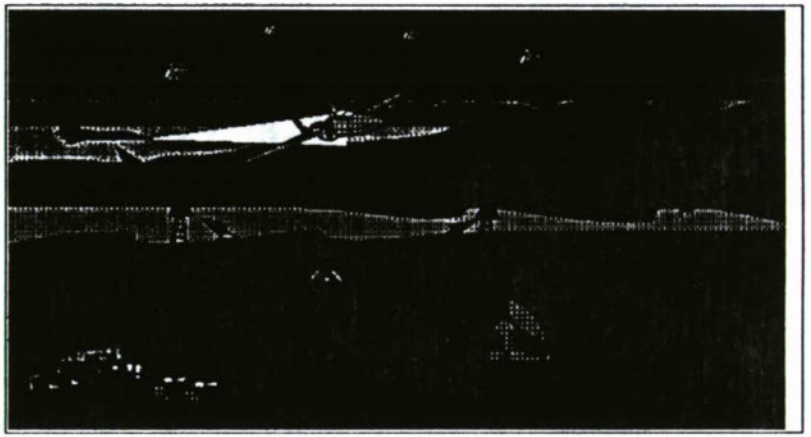
# Alpena ANG Training Range

PROG MGRS: Mr W. Tracy/J. Porche
ORG: ASC/VXC
PHONE: DSN 872-9391/ext 5050/5068

## GENERAL

DESCRIPTION

The Air National Guard (ANG) has a need for an Air Combat Training System (ACTS) in Michigan. The system will be used for both small exercises from other ANG units and for larger exercises operated out of Alpena Michigan. The system is to utilize current available technology and is to be conducive to upgrade in later years to permit additional features, simulations to be added to keep this system current with other USAF ACTS ranges.



## REQUIREMENTS

- o Requirements Document not provided to date
- o Anticipated Number of Participants 36HAA/100LAA
- o Anticipated to be an untethered system
- o Anticipated to be a GPS system

## SCHEDULE

- o Contract(s) Award 2Q/3QFY97
- o Testing 4Q/FY98
- o IOC Alpena Range 2Q/FY98
- o IOC "Other" ANG ranges 4Q/FY98
- o FOC Alpena Range, other ANG ranges 2Q/FY99




# TRAINING AND SIMULATION FOR SPACE

LT COL JOHN PUFFENBARGER
DIRECTORATE OF REQUIREMENTS

# OVERVIEW

- AIR FORCE SPACE COMMAND MISSIONS
- VISION FOR SPACE TRAINING
- MODELING AND SIMULATION

# SPACE ROLES AND MISSIONS

## SPACE FORCES SUPPORT

- LAUNCH
- SATELLITE OPERATIONS

## SPACE-BASED FORCE ENHANCEMENT

- SURVEILLANCE & RECCE
- NAVIGATION
- COMMUNICATION
- WEATHER
  - TERRESTRIAL
  - SPACE

## SPACE FORCE APPLICATION

- GROUND BASED NUCLEAR DETERRENT
- CONVENTIONAL STRIKE

## SPACE CONTROL

- SPACE SURVEILLANCE
- COUNTER SPACE
  - PROTECT
  - PREVENT
  - NEGATE
- MISSILE DEFENSE
  - WARNING
  - INTERCEPTION

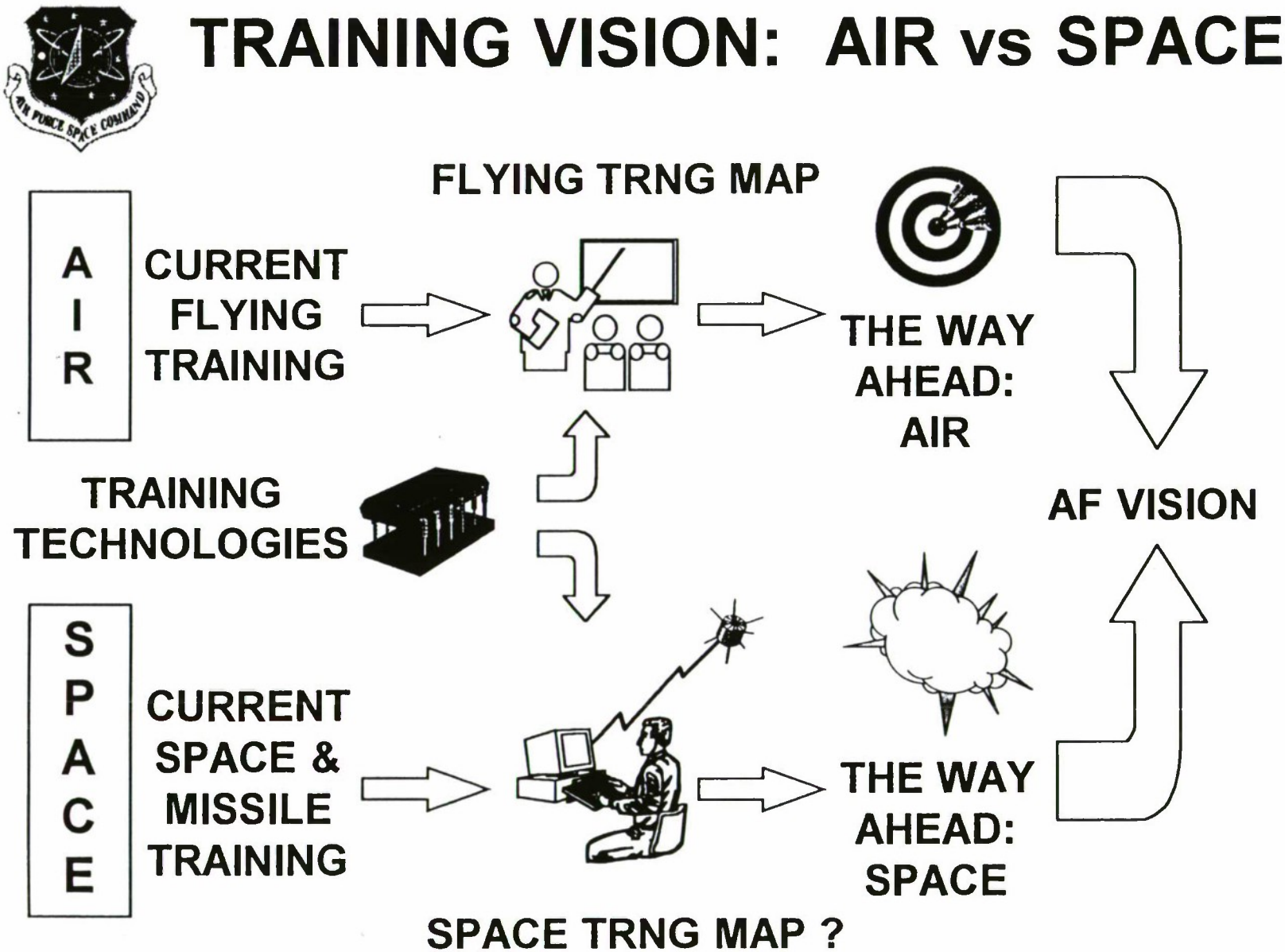
# NEW PERSPECTIVES ON TRAINING

- SPACE SUPPORT TO THE WARFIGHTER
- NORMALIZED OPERATIONS AND TRAINING
- MISSION READY COMMANDERS
- STANDARDIZED DOCUMENTATION

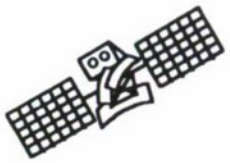
# SPACE TRAINING INITIATIVE

- PUT SPACE TRAINING ON PAR WITH FLYING TRAINING
  - AETC TRAINS INITIAL SKILLS
  - AFSPC OPERATES, EXERCISES, REHEARSES, SUSTAINS
- ENGAGE IN TRI-COMMAND EFFORT WITH AFMC AND AETC
  - SPACE TRAINING MAP (AETC)
  - SPACE TRAINING TPIPT (AFMC)
  - TRAINING COMPONENTS OF MAPS (AFSPC)

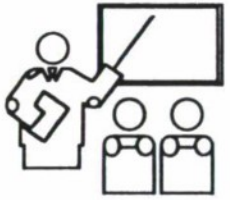
# TRAINING VISION: AIR vs SPACE



# TEAM SOLUTION



MISSION OPS



TRAINING



TECHNOLOGY

TRI-COMMAND PROCESS ACTION TEAM



SYSTEM TRAINING PLANS



MISSION AREA PLAN



TECH PLANNING INTEGRATED PRODUCT TEAM (TPIPT)



# GOAL



**SYSTEM TRAINING PLANS**



**SPACE TRAINING MISSION AREA PLAN**



**SPACE TRAINING TECHNOLOGY DEVELOPMENT PLAN**

**SPACE TRAINING VISION**

# TRAINING OBJECTIVES

- NORMALIZED TRAINING
  - 20 TRAINING DAYS (OR LESS) TO MISSION READY AT UNIT
  - OFF-LINE UNIT TRAINING EQUIPMENT WITH 95% TASK COVERAGE
  - TRAINING SUPPORTED BY OPERATOR TECHNICAL ORDERS
- AETC TRAINING AT VANDENBERG AFB
  - THE "SCHOOLHOUSE" FOR SPACE AND MISSILES
  - TRAINS INITIAL SKILLS
  - PRODUCES MISSION READY GRADUATES

# SPACE TRAINING INITIATIVE RESULTS

- OPTIMIZES MODERNIZATION PLANNING PROCESS FOR SPACE TRAINING
  - MISSION AREA ASSESSMENT
  - MISSION NEEDS ANALYSIS
  - MISSION SOLUTION ANALYSIS
- CREATES TRAINING INFRASTRUCTURE
  - MISSION AREA PLAN (AETC)
  - SPACE TRAINING TECHNOLOGY PLANNING INTEGRATED PRODUCT TEAM (AFMC)
  - SPACE TRAINING SYSTEM SUPPORT OFFICE (AFMC)

# MODELING, SIMULATION & ANALYSIS

- MODELING AND SIMULATION BRANCH (XPAM)
  - COMMAND FOCAL POINT FOR MS&A
  - POLICY AND GUIDANCE
- SPACE WARFARE CENTER (SWC)
  - EXECUTES MS&A PROJECTS
  - REPORTS TO MS&A BOARD
- MS&A BOARD
  - CLEARINGHOUSE FOR MS&A
  - MEMBERS FROM DO, DR, IN, LG, SC, SWC

# FRONTIER ARENA

- FORUM FOR COOPERATIVE MS&A WITH OTHER SPACE STAKEHOLDERS
- ELECTRONIC CONFERENCE ON WWW
  - DEFENSE MODELING, SIMULATION & TACTICAL TECHNOLOGY INFORMATION ANALYSIS CENTER (DMSTTIAC)
    - PART OF DEFENSE MODELING & SIMULATION ORGANIZATION (DMSO) HOME PAGE
    - http://dmsttiac.hq.iitri.com/enter/html/
  - ACTS LIKE BULLETIN BOARD, ALLOWING REQUESTS, RESPONSES AND THIRD PARTY VIEWING

# POINTS OF CONTACT

Gave Briefing at NTSA Ct.

- **TRAINING REQUIREMENTS BRANCH (DRRT)**
  - **LT COL JOHN PUFFENBARGER**
    **(719) 554-3271; DSN 692-3271**
    **EMAIL: jpuffenb@spacecom.af.mil**
- **OPERATIONS TRAINING BRANCH (DOTT)**
  - **LT COL MIKE HOCKETT**
    **(719) 554-5461; DSN 692-5461**
    **EMAIL: mhockett@spacecom.af.mil**
- **MODELING & SIMULATION BRANCH (XPAM)**
  - **LT COL WALT KOOZIN**
    **(719) 554-4004; DSN 692-4004**
    **EMAIL: wkoozin@spacecom.af.mil**

# SUMMARY

- TAKE ACTION TO FULLY REALIZE THE AF's MISSION AND VISION REGARDING SPACE
- IMPROVE THE PROCESS TO CAPTURE SPACE TRAINING AND SIMULATION REQUIREMENTS
- WORK WITH INDUSTRY TO ACQUIRE TRAINING AND SIMULATION CAPABILITY FOR SPACE

# Space and Missile Systems Center (SMC)

## Space Training and Modeling & Simulation Activities

## New Business

Capt John Hawkins
Developmental Planning Directorate
SMC/XRT

# Overview

- Space Training Technical Planning Integrated Product Team (TPIPT)
- Space Training System Support Office
- SMC Modeling & Simulation Office

# Space Training TPIPT Background

- TPIPT created under Concept Development and Technical Planning Division (SMC/XRT) - 1 Dec 95
- Support Air Force Space Command (AFSPC) and Air Education and Training Command (AETC)
  - Technologies/concepts to meet training needs

# Space Training TPIPT Projects

- Released Space Training deficiencies in the Human Systems Center Concept Call

- Space Training Concept Call
  - Release CBD this spring calling for White Papers

- Consolidate computer-based training, distance learning, modeling and simulation and other training technologies
  - POC for concepts/solutions to meet space training deficiencies

# AETC Space Training Deficiencies

| PRI | TASK | DEFICIENCY |
|---|---|---|
| 1 | -Initial<br>-Mission Qual<br>-Advanced | Space crew operations training capability and nonconcurrent training systems limits ability to provide mission ready graduates. |
| 2 | Same as above | Training infrastructure and delivery methods fragmented, aging, and unresponsive. |
| 3 | Same as above | Lack adequate communications infrastructure to support future resident/nonresident computer-based instruction. |
| 4 | Same as above | Classrooms not configured to conduct interactive multimedia instruction (IMI). |
| - | Professional Military Education | Limited ability to demonstrate application of space systems in an educational environment. |

# AFSPC Space Training Deficiencies

| PRI | MISSION AREAS | DEFICIENCY |
|---|---|---|
| 1 | Satellite Operations | Lack of efficient, realistic, standardized training. |
| 2 | Reconnaissance and Surveillance | Lack of trained exploitation and interpretation capability. |

# Space Training TPIPT Information

- POCs:
  - Ms. Sharon Kolanowski, GS-12
    (310) 363-6228; DSN 833-6228
    Email: kolanowssm@afmbd.laafb.af.mil
  - Capt John Hawkins gave briefing
    (310) 363-1168; DSN 833-1168
    Email: hawkinsj@m105x4.laafb.af.mil

- World Wide Web (WWW) Home Page Address:
  http://www.afbmd.laafb.af.mil/xrt/xrts/index.htm

# Space Training System Support Office Background

- Office created under Acquisition Logistics Directorate (SMC/ALY)- 1 Oct 95

- Work current and future acquisitions
  - Standardize Space Training Acquisition
  - Advise and Support SMC System Program Offices
  - SMC Wide Process Experts ✳
  - Create Cost Accounting Record
  - Analyze Contractor Developed Training ✳ Documents

# Space Training System Support Office Organization

- Organized By Mission Area
  - Space Control (Space Surveillance & Early Warning)
  - Space Support (Spacelift, Range, Air Force Satellite Control Network)
  - Force Enhancement (Satellite Operations, Navigation, Weather, Recon & Surveillance)
  - Force Application (ICBMs)

# Space Training Systems Support Office Projects

- Spacelift Trainer
  - Work with AFSPC to acquire a computer-based trainer/part-task trainer for spacelift
- Contractor support
  - Studies
  - Database management

# Space Training Systems Support Office Information

- POCs:
  - Chief: Mr. Caney Arnold, GS-13
    (310) 363-2502; DSN 833-2502
    Email: arnoldc@m110x2.laafb.af.mil
  - Capt Lisa J. Hawkins
    (310) 363-5442; DSN 833-5442
    Email: hawkinslj@m110x2.laafb.af.mil
  - Mr. Carl Attruia, GS-12
    (310) 363-2869; DSN 833-2869
    Email: attruiacf@m110x2.laafb.af.mil

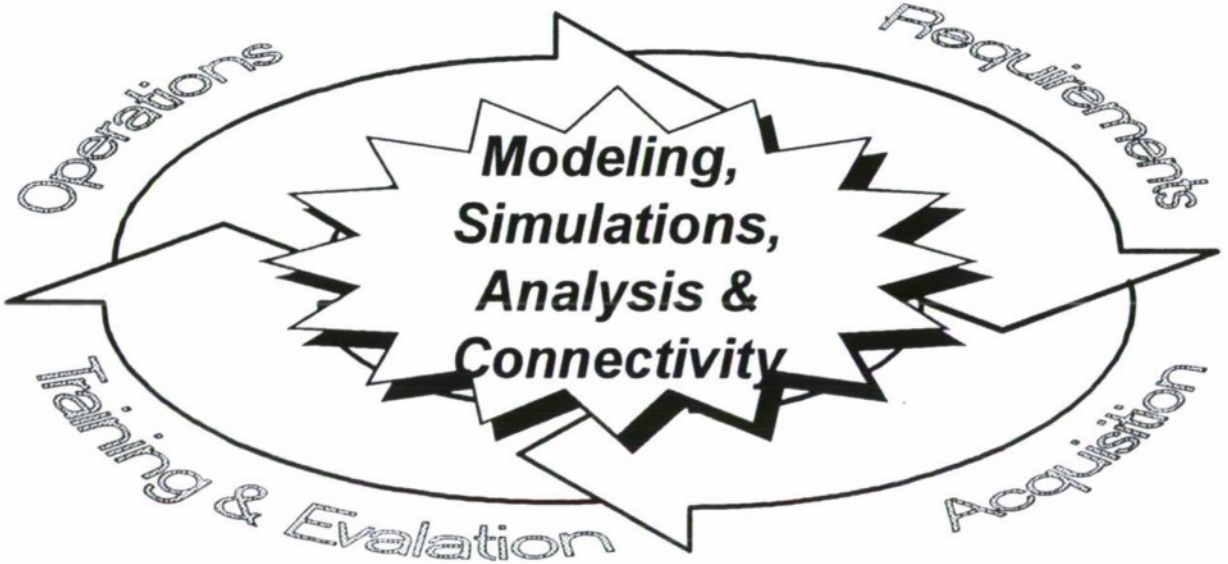
# SMC Modeling & Simulation Office Background

- Office merged with AF BMD M&S Office under Systems Engineering and Integration Division (SMC/XRE) - July 1995

- Frontier Arena
  - MS&A initiative involving SMC, AFSPC, and Phillips Laboratory
  - Bring space to the warfighter through distributed simulation
  - Closer cooperation between space and air warfighters, space system users, and space system developers

# SMC Modeling & Simulation Frontier Arena

- Frontier Arena (Cont.)
  - Providing accurate space modeling in wargames and exercises (analysis and training)
  - Showing benefits of current and potential future space systems to the warfighter



# SMC Modeling and Simulation Campaign Analysis

- Use METRIC (campaign analysis tool) to quantify the military value of space to the warfighter
- Opportunities:
  - Space-Based Radar study; compare results to DARO UAV study
  - Space-Based Laser study for BMDO
- Minimalist modeling
  - Spreadsheet & home-grown code analysis; one step up from "back of the envelope"
  - Quick turn-around, low resolution
  - Short timelines, low cost

# SMC Modeling & Simulation Needs from Industry

- SMC M&S Office needs from industry:
  - Space systems models and simulations
    - Stand-alone
    - Confederations with in-house tools
  - Help updating and improving legacy models
    - Implementation of DIS and DIS++ standards
    - Transition to HLA
  - Distributed modeling and presentation centers

# SMC Modeling & Simulation Information

- POCs:
  - SMC/XRE: Lt Rick Luce, (310) 363-8975
    Email: lucerc@afbmd.laafb.af.mil
  - AFSPC/XPA: Lt Col Walt Koozin (719) 554-4004
    Email: wkoozin@spacecom.af.mil
  - PL/VTQ: Capt Mark Snyder, (505) 846-5102
    Email: snyderm@maquis.plk.af.mil
- WWW Home Page Address:
  - http://www.afbmd.laafb.af.mil/xre/sevstrat/fa/index.html

# Summary

**SMC Needs**



**Your Help!**






# National Air and Space [Warfare] Model (NASM)

Guy Giroux
Tim Rudolph

## 8 March 1996

# Overview



- NASM Program Definition
- NASM Concept/Phasing
- Relationship with JSIMS
- Acquisition Streamlining
- NASM Objectives
- NASM Technical Requirements
- NASM Derived Requirements
- Summary

# What is NASM: Project Definition



A project under the AF M&S Program to develop a simulation system of portable, interoperable and reusable components providing realistic representation of the full range of aerospace missions for Air Force specific and Air Force representation in joint training. The initial implementation will replace the Air Warfare Simulation (AWSIM) for battlestaff operational readiness training.

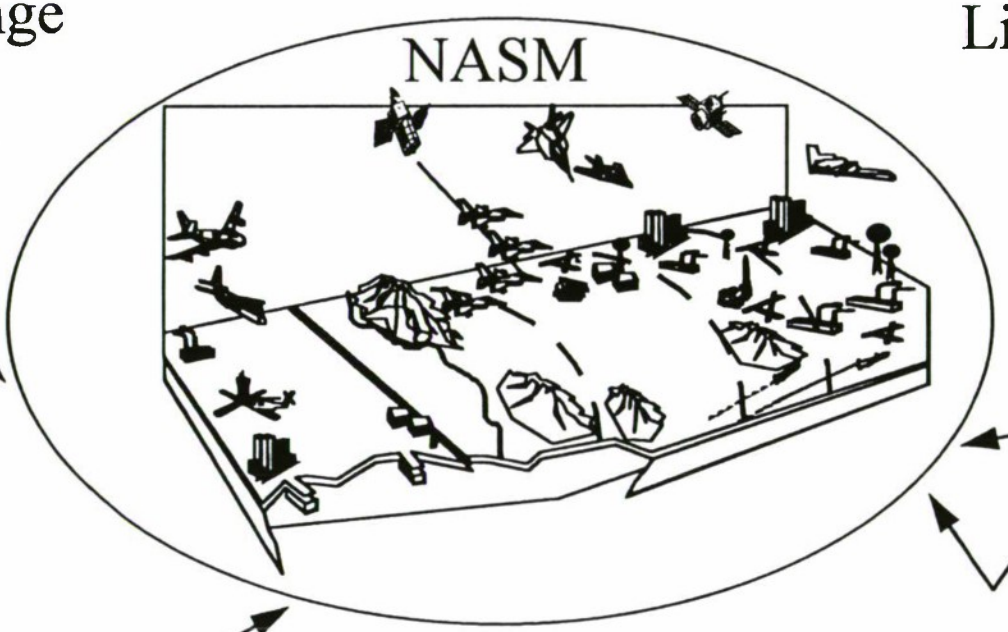
# NASM Concept



Live/Range



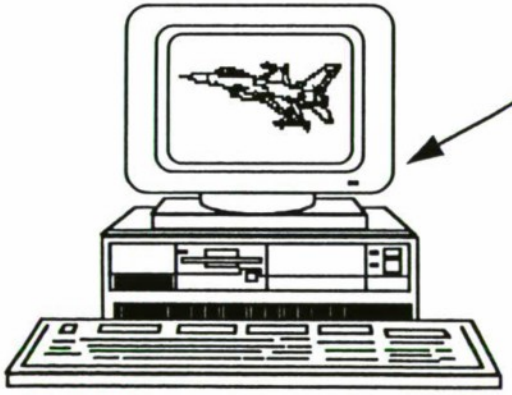
NASM



Live/Real World C2



Synthetic Forces



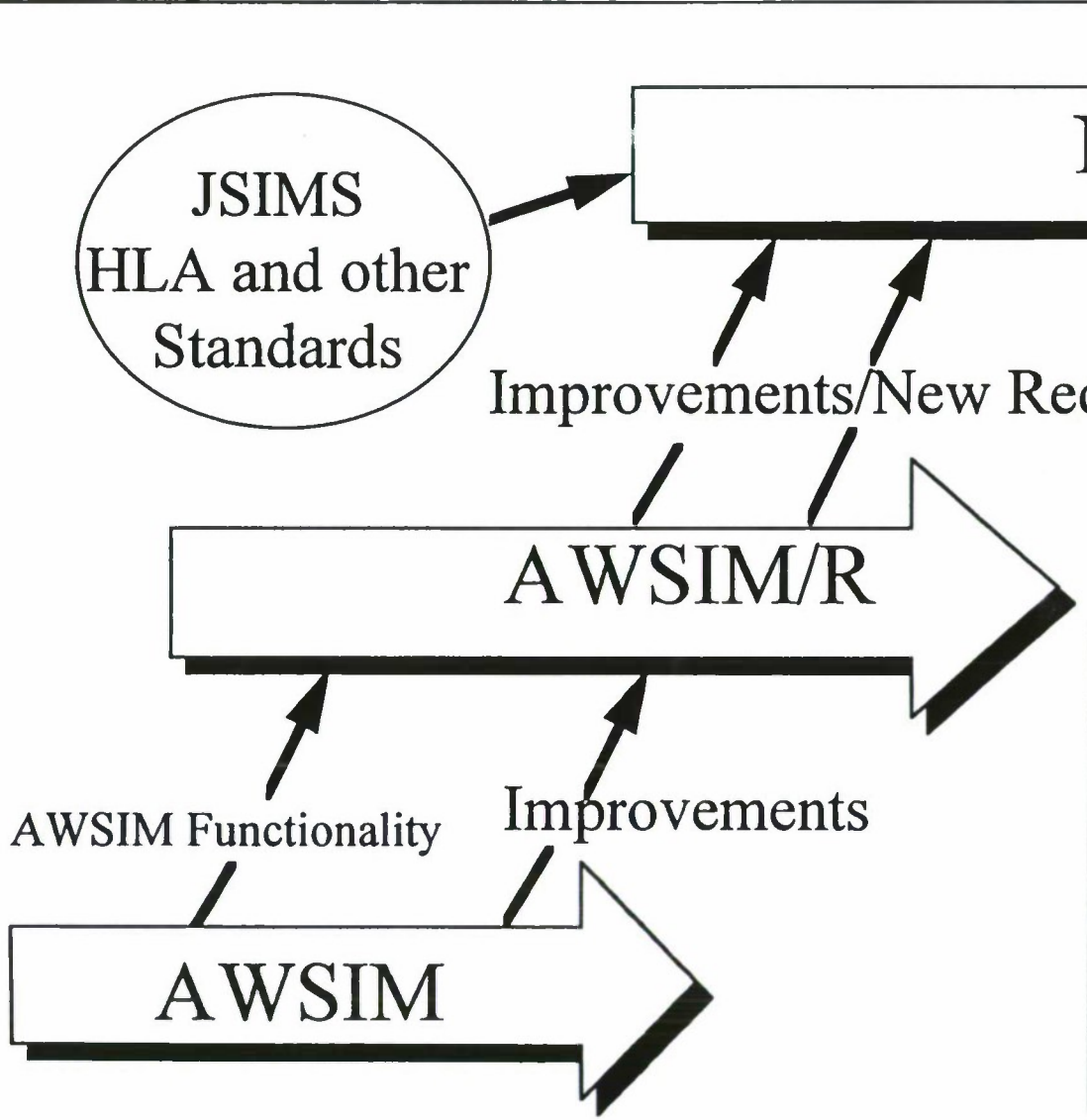
Primarily Constructive

Virtual Simulators & Simulations



# NASM Phasing

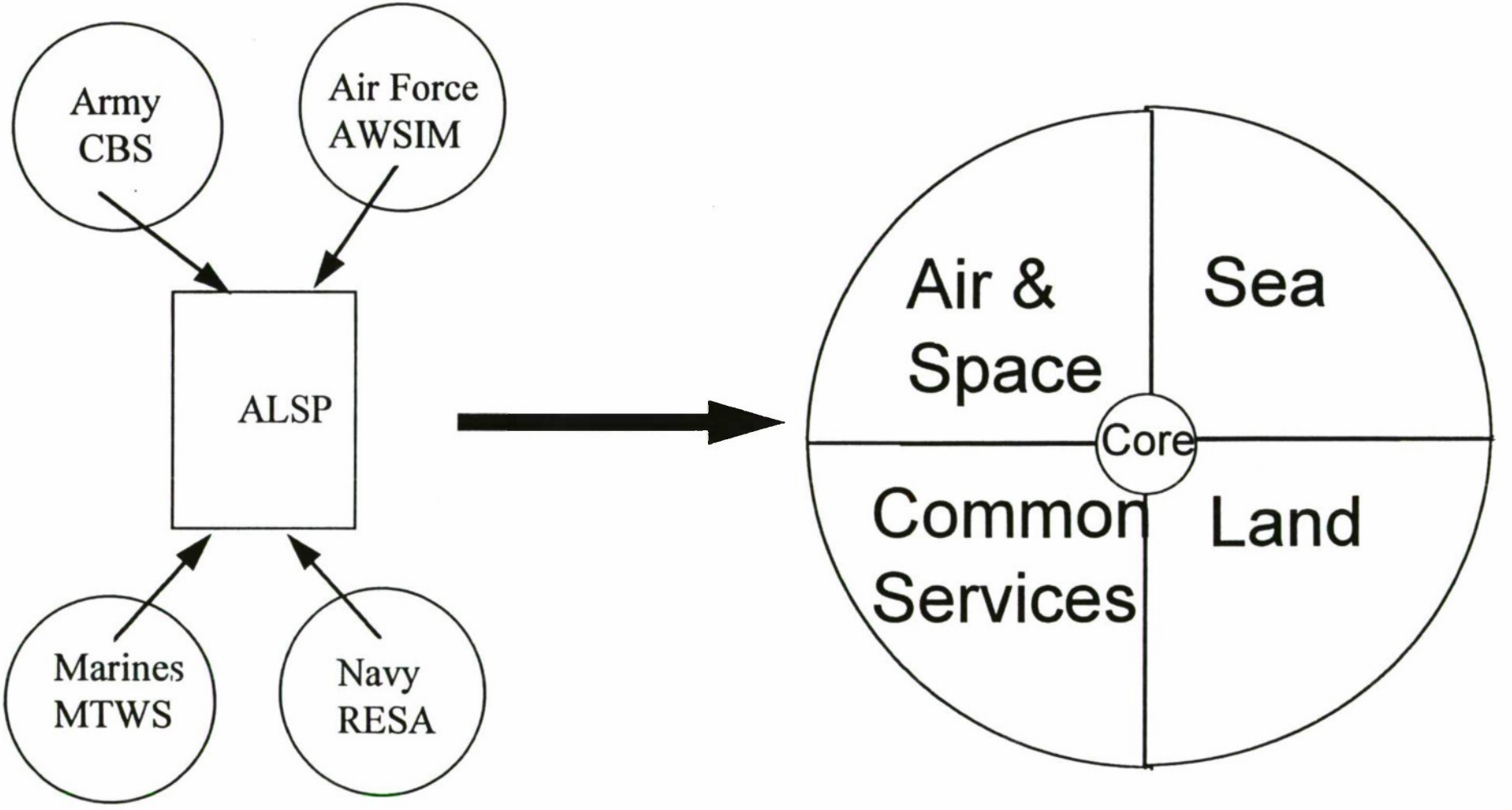





- Maintain existing functionality
- Supplement functionality/Req
- Improve O&M
- Reduce planning time/cost
- Use joint standards, databases, protocols features
- Use standard common features and functions

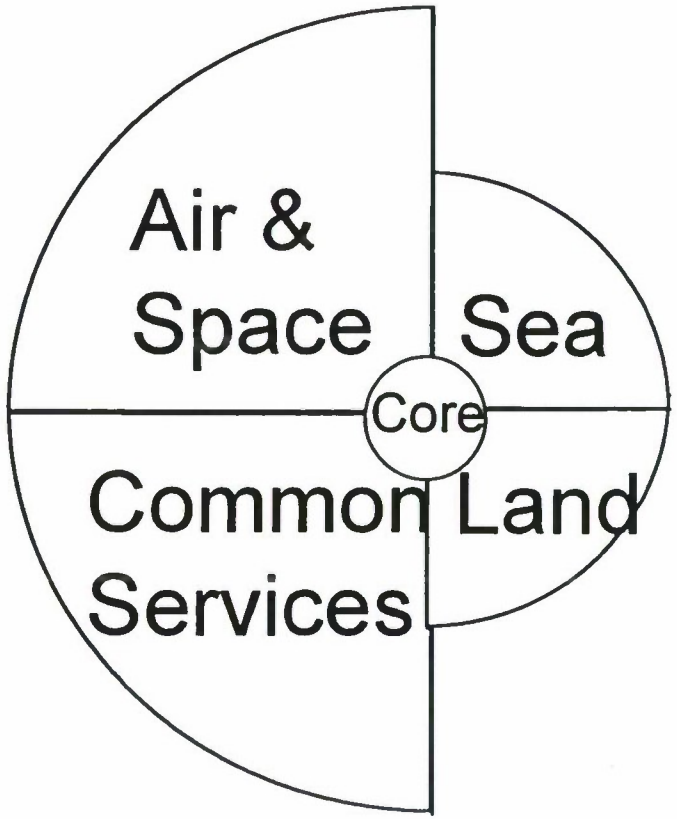
# JSIMS/Service Relationship





# NASM for AF Exercises






- NASM plays in full (A&S)
- Other models play in SAF/CGF modes
- JSIMS RTI/Standards
- JSIMS Common "Core"
- JSIMS Common Services
- Less model-specific training



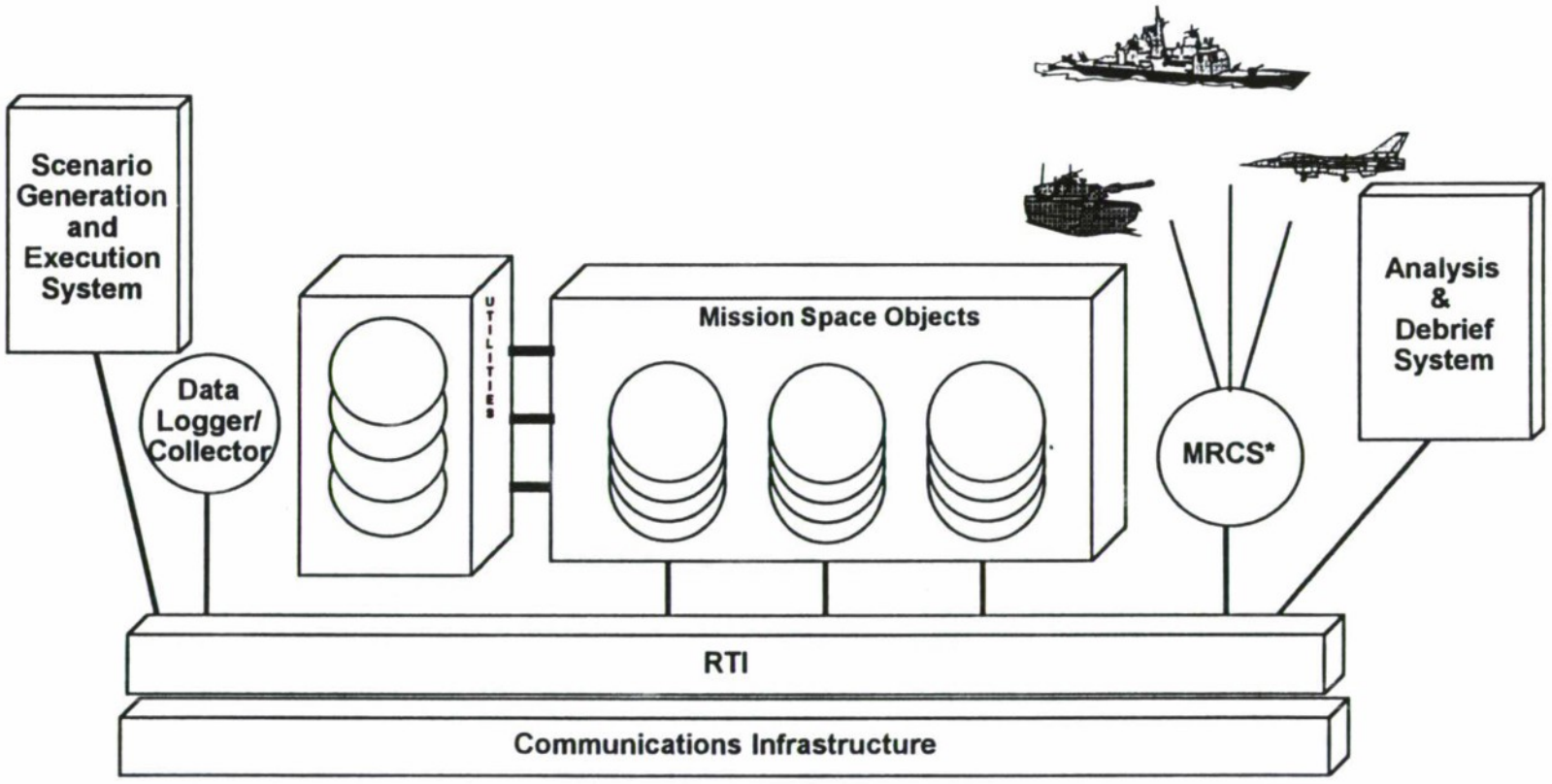

# JSIMS Mission



- **Provide a distributed simulation capability to train CINC, Joint Task Force, and service component commanders and battle staffs**
  - Develop a common simulation evironment to support joint and individual service training and mission rehearsal
  - Coordinate and integrate services' efforts in next generation simulation

# JSIMS Notional Architecture






* Modular Reconfigurable C4I Surrogate

# NASM Acquisition Streamlining



- **NASM contract process incorporates new Streamlining Initiatives**
  - Goals include:
    - Reduced time for contract award
    - Contractor developed NASM system
    - Reduced number of Government approved documents

# Air Force Streamlining Initiatives

NASM Program Office, 8 March 1996 HQ ESC/AVM

SINGLE ACQUISITION MANAGEMENT PLAN

COMMERCIAL PRACTICES

Excessive Paperwork

Detailed How To

STATEMENT OF OBJECTIVES

INTEGRATED MASTER PLANS

Detailed Oversight

PERFORMANCE SPECIFICATIONS

MIL-SPECS & Standards

CDRL REDUCTION

INTEGRATED MASTER SCHEDULES

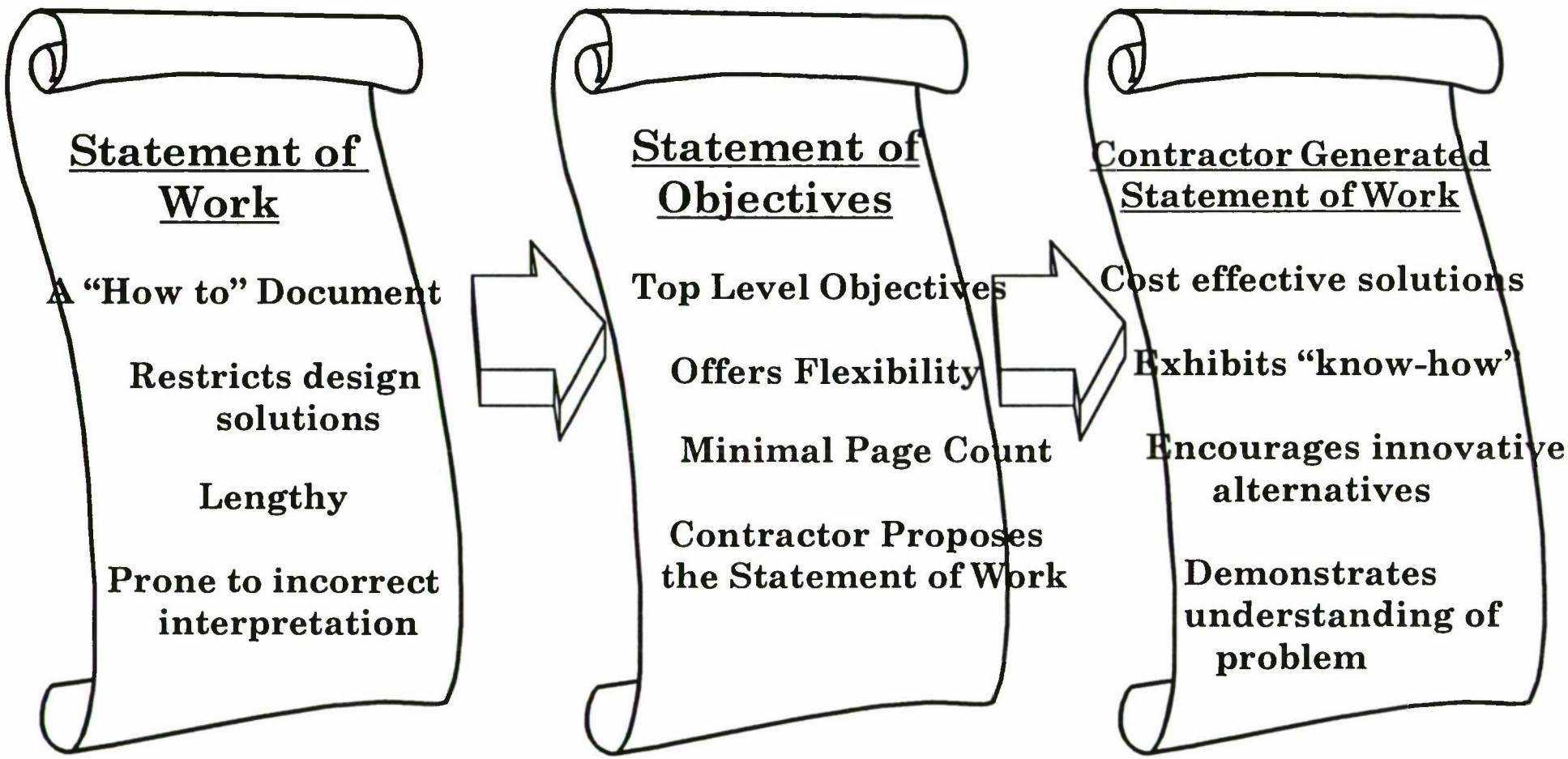
Over-Specification

ELIMINATION OF LOWER LEVEL SUPS

ELECTRONIC RFPS

# SOO and Contractor Generated SOW





# Streamlined Process



- Requirements Baseline vs. Development Baseline
  - Government maintains the Requirements Baseline
  - Contractor maintains the Development Baseline
- Statement Of Objectives (SOO) vs. Statement of Work (SOW)
  - Government provides broad objectives and goals
  - Contractor proposes the way to meet the objectives
- Technical Requirements Document (TRD) vs. Specification
  - Government states overall technical requirements
  - Contractor develops specifications
- Contractor Proposed
  - Work Breakdown Structure (WBS)
  - Schedule
  - Reviews
  - Documentation
  - Milestones




# NASM Objectives



- **Statement Of Objectives (SOO) Highlights**
  - Develop an expandable, scaleable simulation system to train battlestaffs at Wing level and above by IOC
    - System shall be Contractor developed, designed, and supported
  - Develop a Contractor/Government team to manage NASM
    - Electronic access to data, visiblity into all aspects of program
  - Contractor proposed metrics will form the basis of award fee evaluations
  - Comply with Defense Management Simulation Office (DMSO) High Level Architecture (HLA) Interface Specifications
  - Provide Operations and Maintenance (O&M) for Legacy System(s)

# Key Areas of Interest in Contractor's Proposal



- **Process - Contractor Proposed**
- **Metrics - Internal Corporate Management Metrics**
- **Integrated Product Team (IPT)**
  - Government (Program Office and User) and Contractor
- **Past Performance**
  - Performance Risk Assessment Group (PRAG)
  - Software Capability Evaluation (SCE)
- **Risk Management**

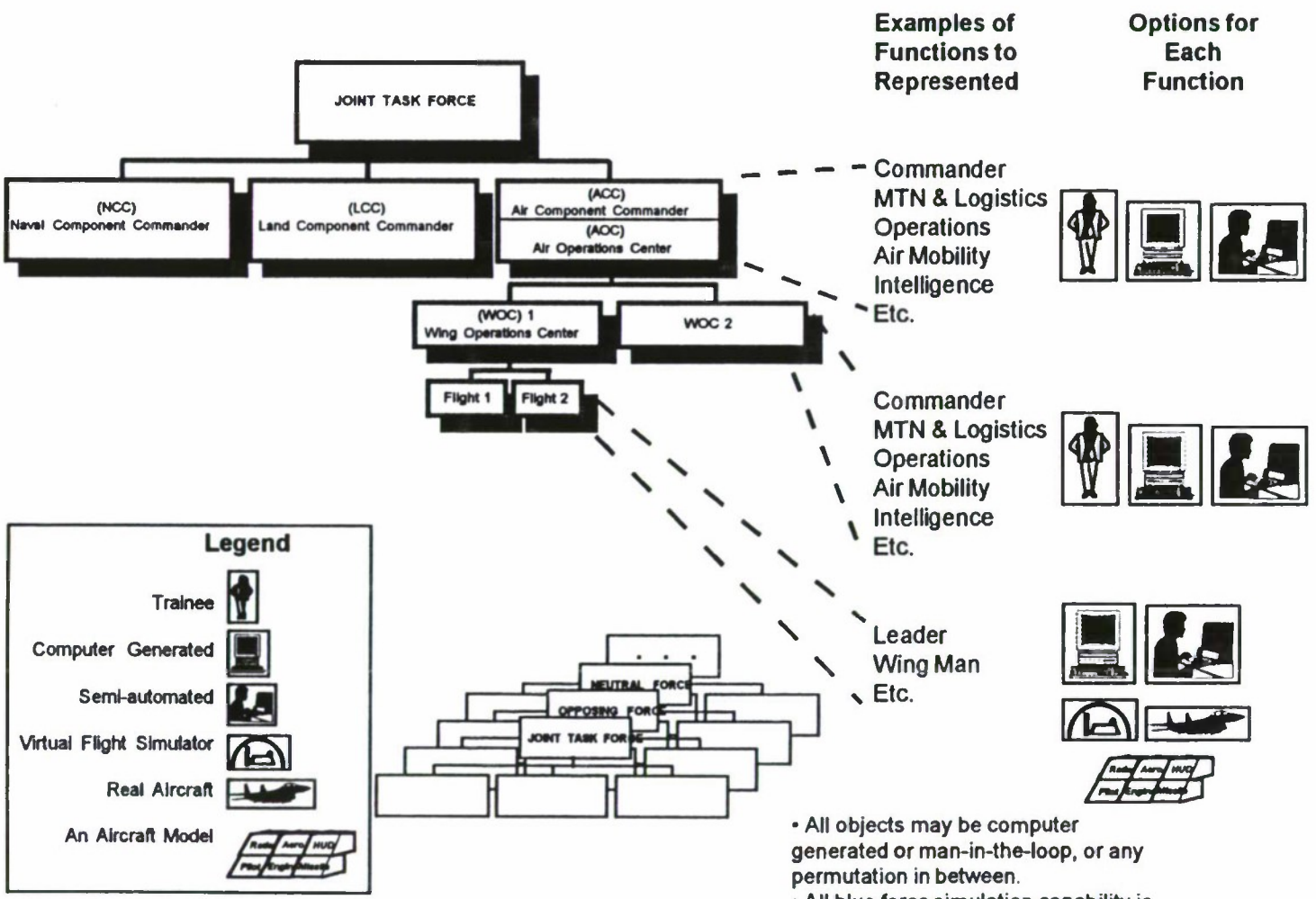
# Technical Requirements Document (TRD) Overview



- **Section 1 - NASM Overview**
- **Section 2 - References**
- **Section 3 - Requirements**
  - Shalls are contractually binding
- **Section 4 and 5 - Not Applicable**
- **Section 6 - Notes**
  - Design and implementation considerations
  - Not contractually binding
- **Appendices**
  - Glossary
  - IOC/FOC Functional Description
  - Acronym List

# NASM Simulation World

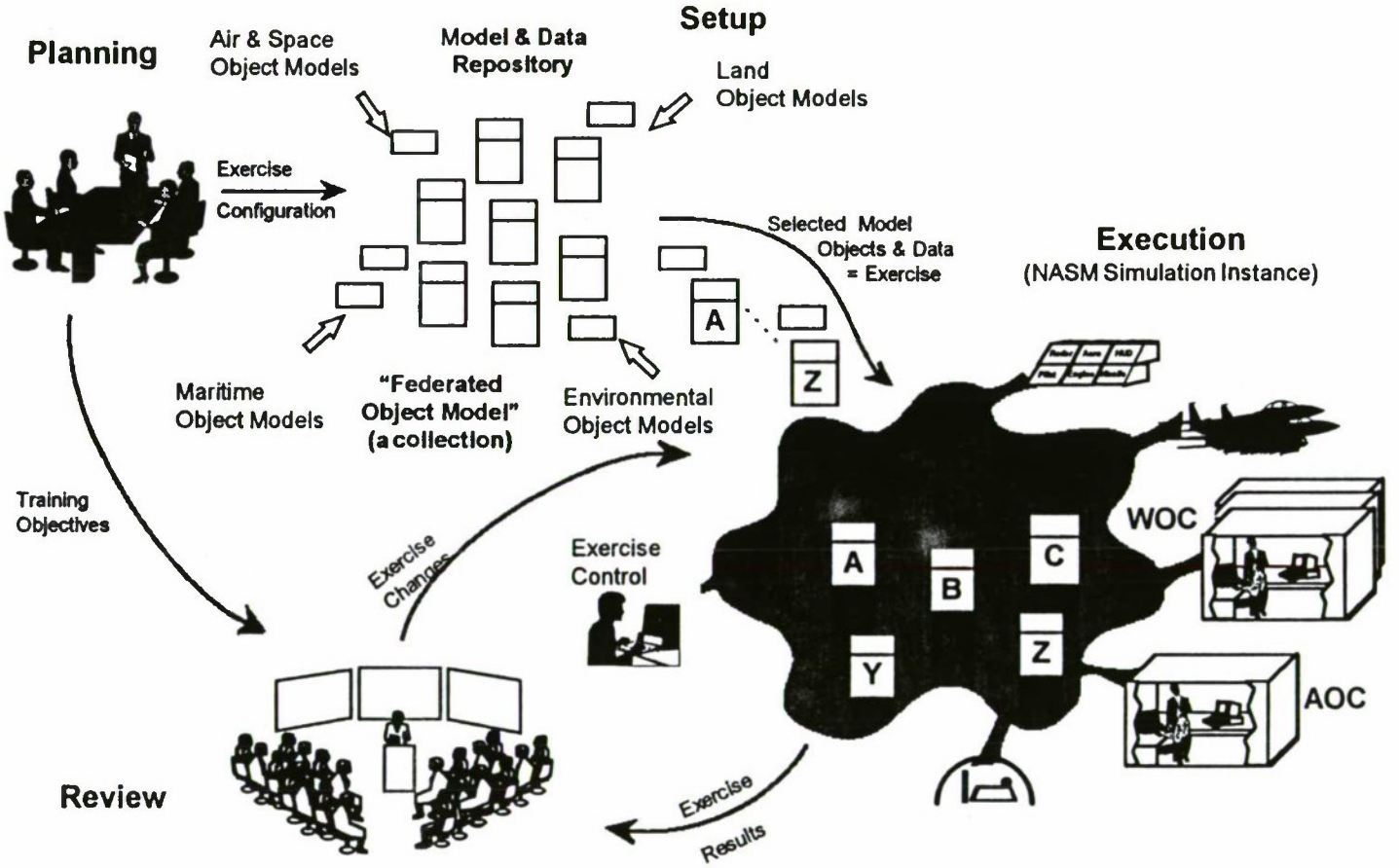
NASM Program Office, 8 March 1996 HQ ESC/AVM




- All objects may be computer generated or man-in-the-loop, or any permutation in between.
- All blue force simulation capability is available for each friendly and opposing force.

# Functional Clustering








# System Requirements



- **Provide effective training for commanders and battlestaffs for aerospace, Military Operations Other Than War (MOOTW), information warfare, and special operations missions**
- **Accurately simulate all aspects of the battlespace**
  - assets (equipment, sensors, communication links)
  - forces
  - space
  - environment
  - logistics
  - interactions with real world systems
- **NASM entity representation ranges from sub-components to aggregate units**
  - Provide multiple levels of consistent aggregation/deaggregation mechanisms (effects & behavior)




# System Requirements (Continued)



- **Provide interfaces with real world C4I systems**
- **Provide interfaces with constructive models and virtual simulations/simulators via the DOD High Level Architecture (HLA) Interface Specification**
- **Provide distributed, collaborative pre-exercise, exercise, post-exercise (after action review) environment**
  - Distributed game control and simulation execution

# System Development Approach



- **Compliant with DoD Modeling & Simulation (M&S) High Level Architecture (HLA) Interface Specification**
  - Close cooperation with JSIMS and other Development Agents
- **Iterative spiral development coordinated with users**
- **Prototypes conducted to identify/mitigate high risk areas**
- **Software development process**
  - Use of Ada
  - Use software maturity matrix
  - Best commercial practices
- **Reuse opportunities**
  - Significant reuse of new software (object based)
  - Possible reuse/leveraging design/data of existing model




# Derived Requirements



- **Functional capability to realistically and accurately represent the full range of aerospace power (AFM 1-1, including MOOTW)**
- **Battlestaff training & readiness**
  - Train as we fight (real world C4I system interfaces)
  - Train where we fight (distributed simulation)
- **Capability for distributed collaborative exercise planning, distributed game control, and after action reviews**
- **Interface with Joint & Service models in the next generation federation compliant with DoD High Level Architecture (HLA)**




# Derived Requirements (Cont.)



- **Semi-Automated Forces (SAFOR) of friendly & Opposing Forces (OPFOR)**
- **Expanded operations capabilities**
  - Execute slower, near & faster than real time
  - Multiple concurrent levels of security & access
  - Multiple levels of resolution & fidelity




# Architectural Principles



- **Object-oriented technology**
- **Use of Commercial Off The Shelf (COTS), Government Off The Shelf (GOTS)**
- **Logical time as a subset of discrete event**
  - <, =, > realtime
- **Scalability**
  - Seminar education to major exercise
  - MOOTW to 2 Major Regional Conflicts (MRCs)
- **CGF & SAFOR configurability**
- **NASM architecture will be extensible & flexible to incorporate additional functionality and evolve to address additional M&S user communities and operational needs.**

# Summary



- **NASM is a forward reaching, expandable system to meet training and educational needs**
  - Reduced cost
  - Reduced staffing requirements
  - Streamlined acquisition process
- **Relationship with JSIMS**
- **NASM Technical Requirements**

# Back-up Charts

# NASM Objectives



- **Embrace acquisition reform initiatives**
  - Opportunity for Contractors to plan the program development without jumping through Government hoops
  - Opportunity for innvovation and reduced cost
  - Documents in Contractor format
  - "Zero" based CDRLS with the following exceptions:
    - Cost information required by the FAR
    - IMS
    - Few additional CDRLs required for system baseline
  - Contractor proposed deliverables
    - Government will not approve documents, review & comment only

# NASM Contract Overview



- **Contractor will propose key aspects of the award fee plan**
  - Frequency of award fee periods
  - Evaluation criteria
- **Source Selection**
  - New ESC streamlined proposal process
    - Technical proposals due 45 calendar days following RFP release
    - Final technical proposals due following technical information exchange with Offerors
    - Cost proposals due upon request following acceptance of technical proposals




# General Information



## ➢ Program Schedule:

| | |
|---|---|
| ◆ RFP Release | Apr 96 |
| ◆ Technical Proposals Due | 45 days following |
| ◆ Cost Proposal Due | Upon request |
| ◆ Contract Award | Aug 96 |
| ◆ NASM IOC | Sep 99 |
| ◆ Annual Software Release | Sep 00 |
| ◆ Annual Software Release | Sep 01 |
| ◆ Annual Software Release | Sep 02 |
| ◆ NASM FOC | Sep 03 |

# National Air and Space (Warfare) Model (NASM)
## 25 January 1996

PROGRAM DESCRIPTION:
Develop the new United States Air Force (USAF) distributed system, air/space model to provide the functional capability to realistically represent the full range of aerospace power applications in a joint synthetic battlespace for both Air Force specific and joint training. NASM will be developed for use by USAF commanders and battlestaffs (up to and including Joint Forces Air Component Commanders (JFACCs)), and other organizations in support of training and readiness, education, development of doctrine and practice of operational art, situation assessment, and the formulation, assessment, and rehearsal of operational plans. The current legacy USAF component model, Air Warfare Simulation (AWSIM), was developed in the early 1970s and is supported and used by the Warrior Preparation Center and the USAF Battlestaff Training School. NASM's design will overcome the current limitations of AWSIM and provide a modern foundation upon which to base the further future evolution of operational training and readiness.

As outlined in Commerce Business Daily (CBD) announcement "National Air and Space (Warfare) Model," dated 1 August 1995, NASM will be developed as a computer-based simulation system composed of portable, interoperable, and reusable components within a flexible common framework to integrate representations of the full range of Air Force missions. These missions may be stand alone or be tightly coupled with the Joint Simulation System (JSIMS). NASM must be able to provide a stand-alone Air Force training capability and also support the Air Force's joint training requirement. NASM will have the capability to interact with external live simulations, virtual simulators, and constructive models both within the Air Force and with the DOD JSIMS family of models. NASM will be scaleable to support JFACC and staff training down to the wing and mission level. NASM will support global, theater, and regional command center exercises, single echelon command and staff training activities, staff education and seminar training, and sustained training models. NASM will be flexible and extensible to incorporate additional functionality and evolve to address additional modeling and simulation user communities and operational needs (e.g., analysis, USAF deliberate planning, force requirements planning, the combat operations effectiveness analysis process, test and evaluation, and many aspects of logistics planning.

NASM will interface with real world C4I and support systems to provide resource efficient and intuitive interfaces for training in the places these operations would normally be conducted. The NASM domain will include the full spectrum of air and space warfare and those Operations Other Than War (OOTW) in which uniformed personnel could be tasked, providing the full range of USAF missions, including all those described in AFM 1-1 and other guidance.

NASM will provide a readily available, operationally realistic, distributed synthetic environment representation, force representation, and behavioral representation. The scope of NASM training will include the capabilities to provide distributed collaborative planning/scenario development (pre-exercise composition), simulation system execution (exercise), and the analysis of the exercise results (post-exercise).

The NASM development contractor will maintain and support the current Air Force standard air combat model, AWSIM (AWSIM is currently being re-engineered by ESC), until NASM is developed, delivered and accepted by the Air Force.

The NASM development contractor will actively participate as part of the NASM Integrated Product Team (IPT). As a IPT member, the contractor will interact with JSIMS and the other programs listed below (the list is not all inclusive and will be added to as the NASM program progresses).

Since the release of the CBD, the Government has changed the contract type contemplated for this effort. The Government now contemplates an eight year Cost Plus Award Fee type contract. The RFP for this effort will comply with the new Air Force acquisition streamlining initiatives. These initiatives will be explained in detail

during the Pre-Solicitation Bidders Conference. Some of the changes associated with this approach include releasing an RFP containing a Statement of Objectives (SOO) and Technical Requirements Document (TRD) instead of the traditional Statement of Work (SOW). The Contractor will submit the SOW with their proposal. The Contractor SOW shall outline their approach for conducting the program. While we anticipate the final contract award may contain a few CDRLs, we are being with a zero-based CDRL list. The Government will require access to Contractor data, however, that data will remain in Contractor format. Other changes to the acquisition process will be discussed in greater detail during the bidders conference.

REQUEST FOR PROPOSAL (RFP) #: F19628-95-R-0070

CURRENT SCHEDULE/EVENTS:

DRAFT RFP RELEASE DATE: Draft was available on HERBB as of 23 November 1995.

PRE-SOLICITATION BIDDERS CONFERENCE: To be held at Hanscom on 25 January 1996. Conference briefings will include an explanation of the Air Force's new streamlined acquisition initiatives often referred to as "Lightning Bolts." This date and the acuisition documentation may change so consult the HERBB for the latest updates.

ESTIMATED RFP RELEASE DATE: Mid-to-late May 1996

ESTIMATED CONTRACT AWARD DATE: Nov 96

RELATED PROGRAMS/EVENTS:

ARPA: ARPA's Synthetic Theater of War (STOW) is a related project involving the development of models for joint service use.

ALSP: ALSP is the current protocol for interfacing the services models. The Air Force's AWSIM, the Army's CBS, the Navy's RESA, the Marine Corps' MTWS, and other specialty models interfaced by ALSP are known collectively as the ALSP Confederation of Models.

WARSIM 2000: The Army's new campaign-level model, currently in development.

ENWGS: The Navy's new campaign-level model, currently undergoing testing.

MTWS: The Marine Corps' campaign-level model, currently undergoing testing.

POINTS OF CONTACT:
Programmatic questions should be referred to: Mr. Guy Giroux (617) 377-6421/NASM Program Manager or Capt Carolyn Kwieraga (617) 377-6423/Deputy Program Manager. Direct questions of a technical nature to: Mr. Tim Rudolph (617) 377-6434/Lead Engineer or Mr. Chi Ma (617) 377-6453. Questions concerning contractual matters to: Ms. Mariam Cameron, (617) 377-6602.

NOTE: The documents contained on this electronic bulletin board are the most current documents available and will be continually updated to accurately reflect the planned acquisition as it progresses. The currently loaded documents are being provided to industry to assist in the exchange of information, so continually check the electronic bulletin board for the lastest information.

# STRICOM

Simulation Vrs Real Training:
Looking for tradeoff
analysis. Cost & Benefit.
Is the Potency of lower
cost. They are working for
answers/analysis.

**Strategic Planning and Program Development Division**




**Chief: John Daniele**

# Supporting International Sales

## Modern Triad

**INDUSTRY**

- International Marketing
- Quality Products and Service
- Flexible Payment Methods
- Offset Agreements

**STRICOM SAMD**

- National Security Objectives
- Foreign Policy Objectives
- Total Package Approach
- Backing and Support of U.S Govt.
- PRO-Active Approach
- Government/Industry Forum

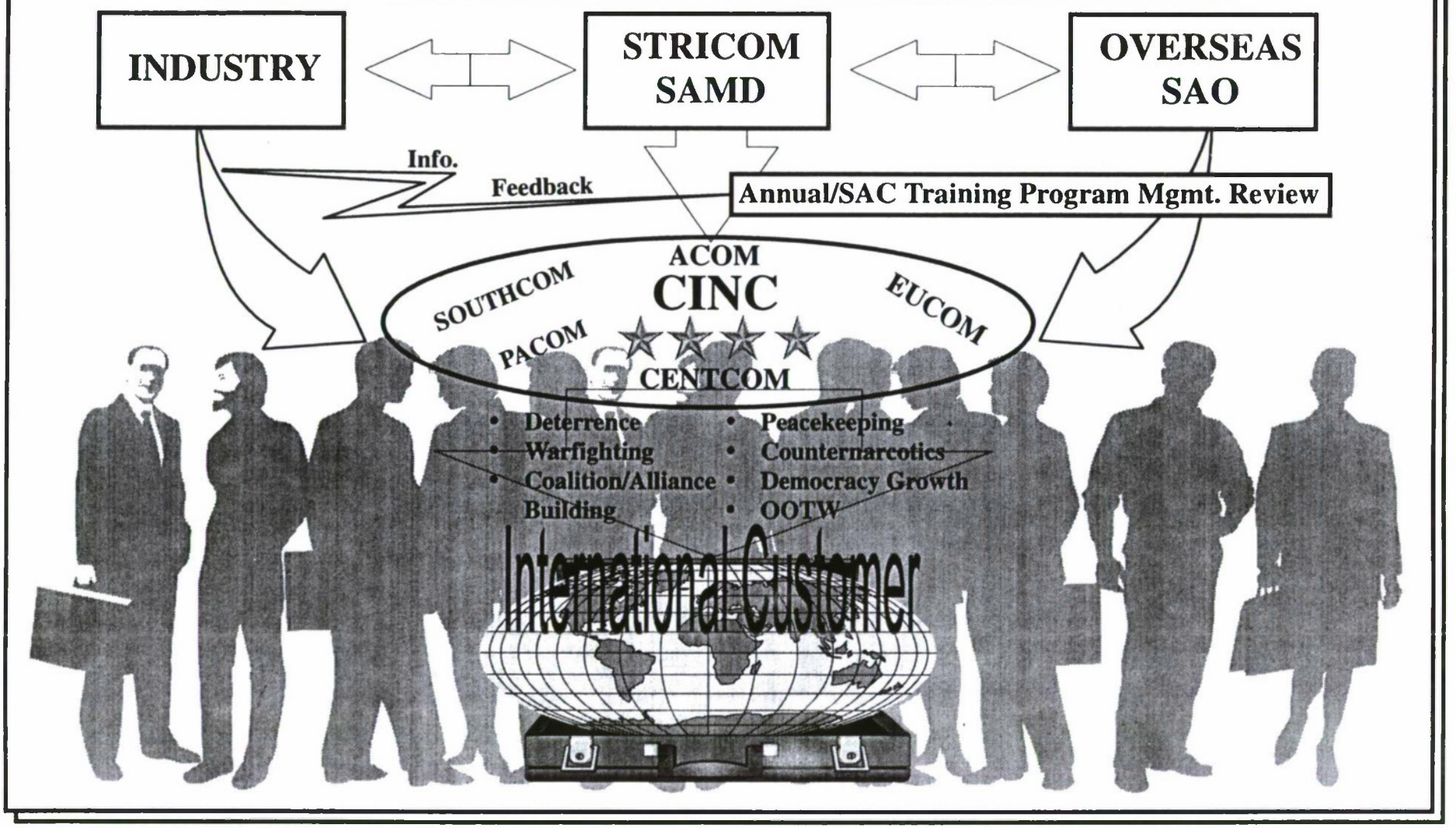
**OVERSEAS SAO**

- Support Industry Marketing
- Endorse U.S. Products
- Facilitate Meetings
- Identify Customer Needs
- Identify Budget Cycles



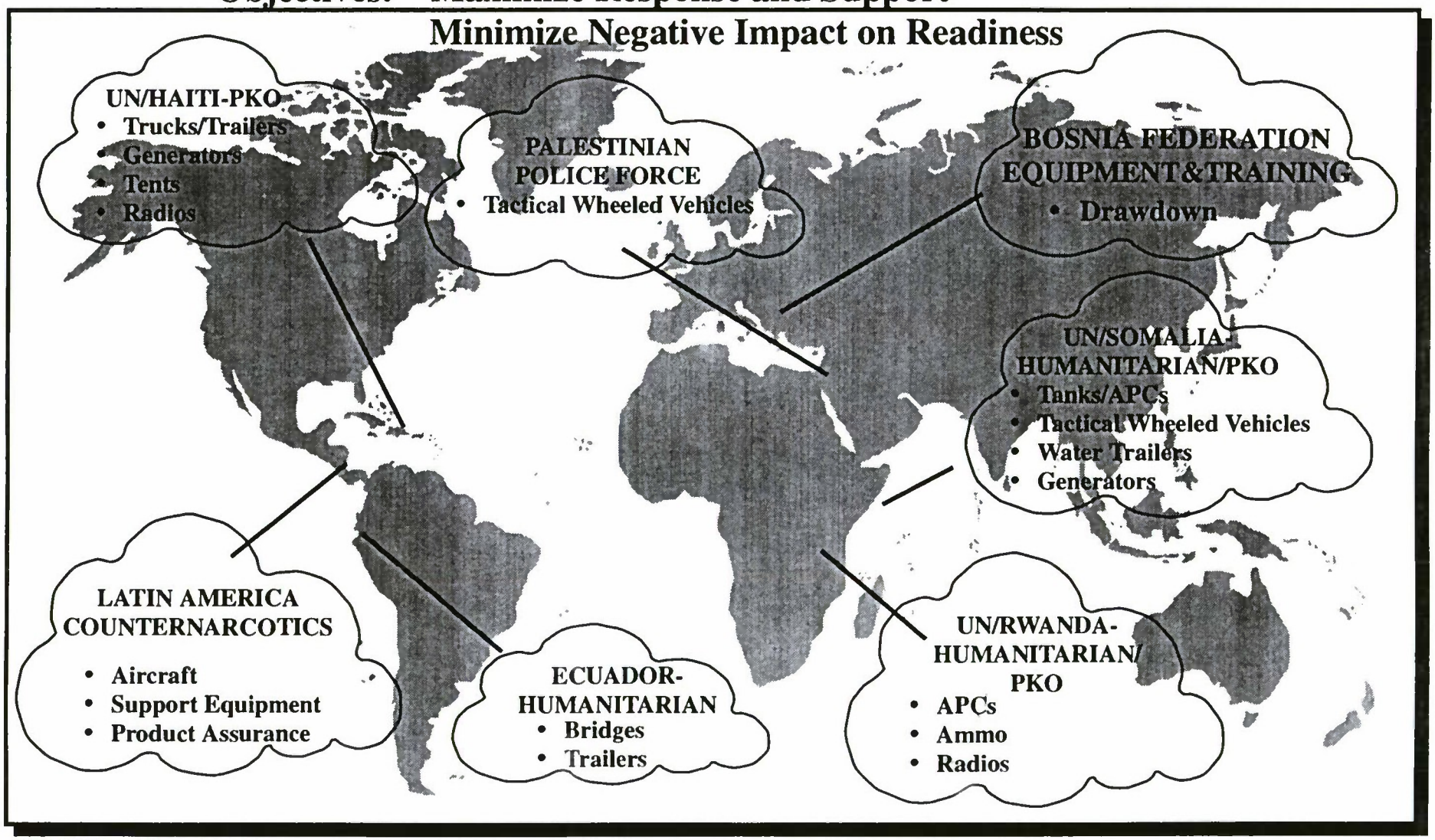
# Supporting International Sales

## By Supporting the Regional CINC's



# Recent Support for Operations Other Than War -- Drawdowns & Leases

**Objectives: Maximize Response and Support**
**Minimize Negative Impact on Readiness**



**Operations Other Than War-OOTW Bosnia Federation Equipment and Training Program**

# PRESIDENTIAL DETERMINATION (PD) 96 - 10 - $100M DRAWDOWN 23 FEB 96

| LOT 1 (15 MAR) | | LOT 2 (12 JUN) | |
|---|---|---|---|
| Machine Gun, M60 | 1,083 | Tank, M60A3tts | 45 |
| CTG Linked 7.62m | 2,000,000 | APC, M113A2 | 80 |
| Riffle, M16A1 | 46,100 | Ammo, 105mm Heat | 1,170 |
| CTG, 5.56 mm | 22,200,000 | Ammo, .50 cal | 40,280 |
| Radio, PRC-77 | 1,100 | Ammo, .50 cal TRNG | 196,370 |
| Radio, VRC-46 | 1,100 | Grenade, Lnch Smoke | 27,240 |
| $69.7Million | | $25.9Million | |

Requirement- Tank Gunnery Training
Small Arms Training
Engagement Training
Command/Staff Training

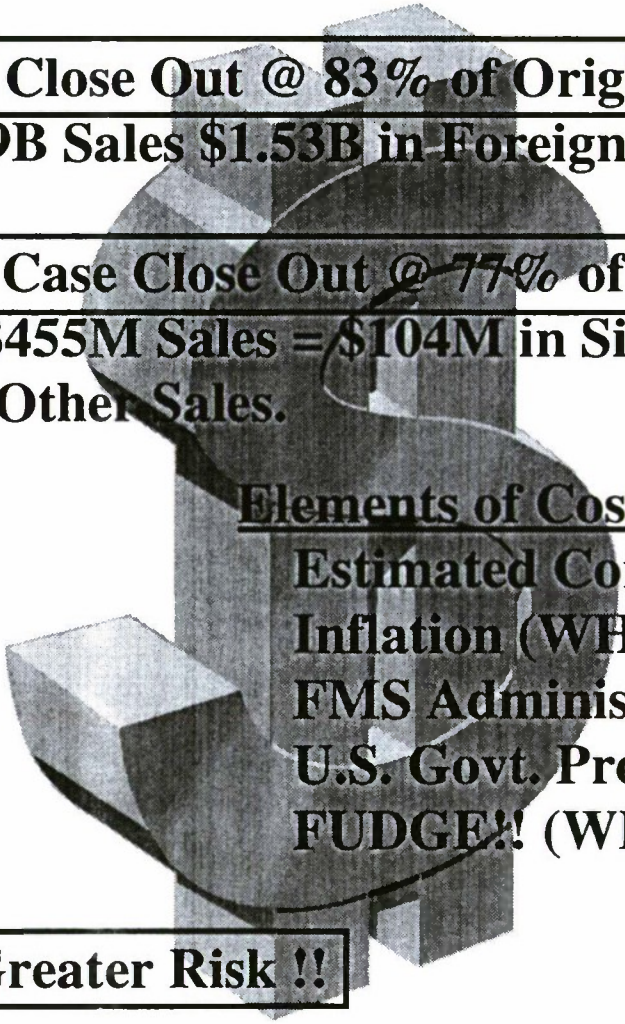
# FMS Issue
# Cost Estimates

**Army Study: FMS Case Close Out @ 83% of Original Estimate**

**Consequence: $9B Sales $1.53B in Foreign Budgets unavailable for Other Sales**

**STRICOM Study: FMS Case Close Out @ 77% of Original Estimate**

**Consequences: $455M Sales = $104M in Simulation Budgets Unavailable for Other Sales.**



**Estimating Methods**

- Cost Formula
- Educated Guess
- Finger in the Wind

**Elements of Cost**

- Estimated Contract Cost (YOU!)
- Inflation (WHO!)
- FMS Administrative Add on (ME!)
- U.S. Govt. Program Mgmt. (ME!)
- FUDGE!! (WHO!)

**Challenge: Assume Greater Risk !!**




# LCCS




# Life Cycle Contractor Support

11 APR 96

# LCCS CONTRACTS

- CONSOLIDATION OF SEVERAL TRAINING DEVICES, SIMULATORS, SIMULATIONS AND INSTRUMENTATIONS
- COMPETITIVE
- FIRM FIXED PRICE
- ONE YEAR W/FOUR ONE-YEAR PRICED OPTIONS
- BIDS FOR SERVICES BASED ON:
  - TYPES OF DEVICES
  - QUANTITY OF DEVICES
  - LOCATION OF DEVICES
  - UTILIZATION RATES
  - PERIOD OF PERFORMANCE
  - AVAILABILITY REQUIREMENTS

# Life Cycle Contractor Support

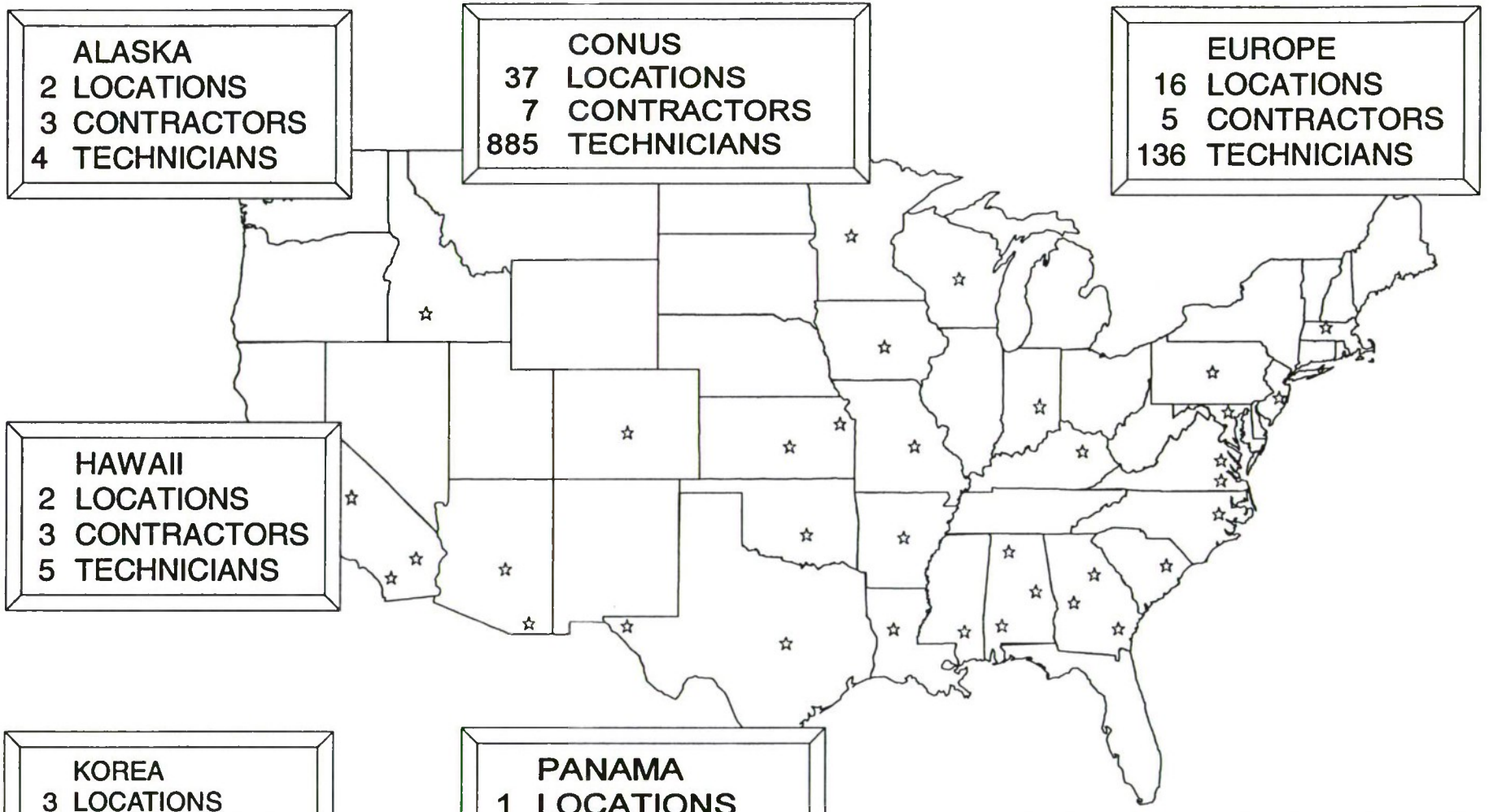
**STRICOM**

**Directorate for Logistics**

All Army Training Devices, Simulators, and Simulations (TDSS) and training instrumentation supported by STRICOM are being considered under one of the following umbrella contracts:

Tactical Engagement/Instrumentation Ranges (TE/IR)
Command,Control,Communications & Intelligence(C3I)
Gunnery/Maintenance Trainers (GMT)
Battlefield Mobility/Target Acquisition (BM/TA)

# LCCS WORLDWIDE




**FY 96 PROGRAM**
**$125 MILLION**

11 APR 96

# PLANNED GROWTH IN LCCS CONCEPT

***STANDARD SUPPORT***

- *Supply*
- *Maintenance*
- *New Equip Trng*
- *Engineering Services*
- *Configuration/Data/Inv Mgmt*

+

***PDSS RELOCATIONS CONVERSIONS MODS/UPGRADES***

+

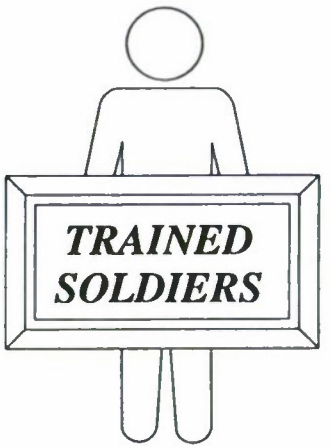
***OPERATORS, INSTRUCTORS, ROLE PLAYERS, FACILITY MGMT***

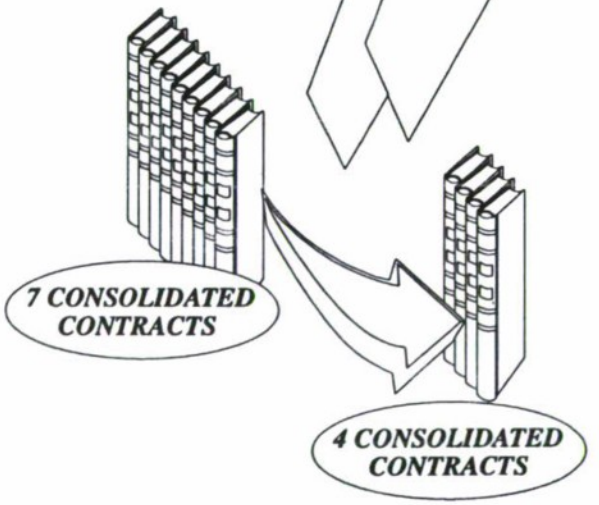
***TURN KEY TRAINING***

***MILITARY UNIT***
*Schedules & Transports Soldiers to Contractor Training*

***CONTRACTOR***
*Trains Soldiers*

***MILITARY UNIT***
*receives*




11 APR 96

# Current LCCS CONSOLIDATIONS

## BATTLEFIELD MOBILITY/ TARGET ACQUISITION

**FLIGHT SIMULATORS**

- UH-1
- CH-47
- AH-1
- UH-60
- AH-64

MH-47
MH-60

**ADFAC ( I & II)**

- WPN SYS DEV TRNR (HAWK)
- HAWK ADV TRNG SIM
- PATRIOT IMT
- STPT
- IFCST
- FIREFINDER OPER TRNR
- FIREFINDER MAINT TRNR
- FIREFINDER DS MAINT DEV
- MET DATA SYST OP TRNG
- MET DATA SYST MAINT
- ELEC INFO DEL SYST
- FIMT
- FOX

## COMMAND, CONTROL, COMMUNICATION & INTELLIGENCE

**SIMNET**

**CCMSS**

- BBS
- CBS
- SEOS
- MMT
- BMMT
- BEMT
- G2WS
- GRMT
- JANUS
- NCSRT
- ARTBASS
- TACSIM

**FAMOPS**

## TACTICAL ENGAGEMENT/ INSTRUMEN. & RANGES

**MILES**

- BASIC
- M1/2/3
- AGES/AD1
- LTID
- MITS

**CTC**

- NTC-IS
- CMTC-IS
- JRTC-IIS
- AWSS

## GUNNERY / MAINT TRNRS

- M1 COFT
- M1A1 COFT
- M2/M3, M2A1/M3A1 COFT
- M60A3 COFT
- ARMOR /BFV MT
- VIGS
- GUARDFIST I & II ( PROTOTYPE)
- FATMT
- M1 TDT
- M60A3 TDT
- TSFO
- PALADIN IMT
- PGT

11 APR 96

# PLANNED LCCS

OH - 58 CSMET
UH - 60 BEAT
UH - 60 COMPOSITE
JROMPS
GOTS
GIMT
MLRS TPT
FIREFINDER V8
UVA
DSCS

TQT/MT
CTS
IEWCS
CCTT
JRTC MOUNT
ASET IV
TWGSS/PGS
MILES AGES
PRIME
MILES 2000
OSV

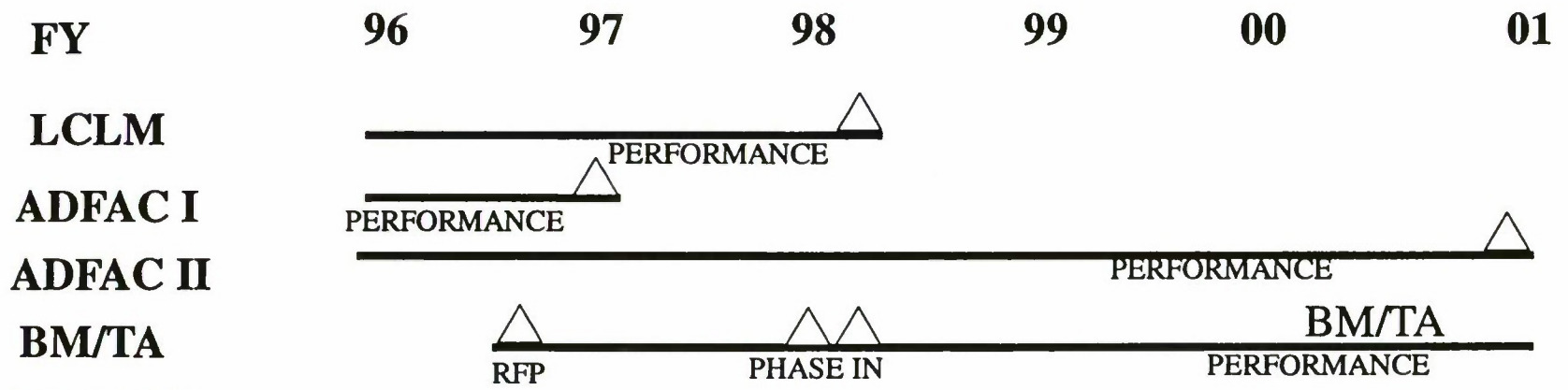
JAVELIN
TSV
EST
PGTS
AGTS
A - FIST
M1A2 MT
M2A3/M3A3
FSCATT
MK - 19 GUNNERY

# LIFE CYCLE CONTRACTOR SUPPORT BATTLEFIELD MOBILITY/TARGET ACQUISITION (BM/TA)

**PURPOSE:**

PROVIDE CONSOLIDATED LOGISTICS SUPPORT FOR THE FOLLOWING DEVICES/SYSTEMS:

| | | |
|---|---|---|
| **LCLM** | SFTS (VISUAL) | AV MAINT TRNRS |
| | SFTS (NONVISUAL) | TRANS MAINT TRNRS |
| **ADFAC ( I & II )** | AIR DEFENSE ARTY TRNRS | CHEMICAL TRNRS |
| | FIELD ARTY TRNRS | |




**FUNDING:**

OMA 1 YEAR & 4 OPTION YEARS ( MID RANGE $50-150M)

# LIFE CYCLE CONTRACTOR SUPPORT BATTLEFIELD MOBILITY/TARGET ACQUISITION (BM/TA)

## ADDITIONAL SUPPORT

- AIRCRAFT ECP's and MWO's
- RELOCATION OF DEVICES
- INSTRUCTOR/OPERATORS

# PLAN FOR LIFE CYCLE CONTRACTOR SUPPORT
# BATTLE MOBILITY/TARGET ACQUISITION
# (BM/TA)

| SYSTEM/FY | 96 | 97 | 98 | 99 | 00 | 01 |
|---|---|---|---|---|---|---|
| SFTS | LCLM △ | | | | BM/TA | |
| AV MAINT TRAINER | LCLM △ | | | | BM/TA | |
| TRANS MAINT TRAINER | LCLM △ | | | | BM/TA | |
| AIR DEFENSE ARTILLERY (ADFAC) | ADFAC (I) △ | ADFAC (II) △ | | | BM/TA | |
| FIELD ARTILLERY TRNRS (ADFAC) | ADFAC (I) △ | ADFAC (II) △ | | | BM/TA | |
| CHEMICAL TRNRS (ADFAC) | ADFAC (I) △ | ADFAC (II) △ | | | BM/TA | |
| FSATS (ADFAC) | ADFAC (I) △ | | ADFAC (II) | | △ BM/TA | |
| GUARDFIST II, IIA (ADFAC II) | | ADFAC II | | | △ BM/TA | |

11 APR 96

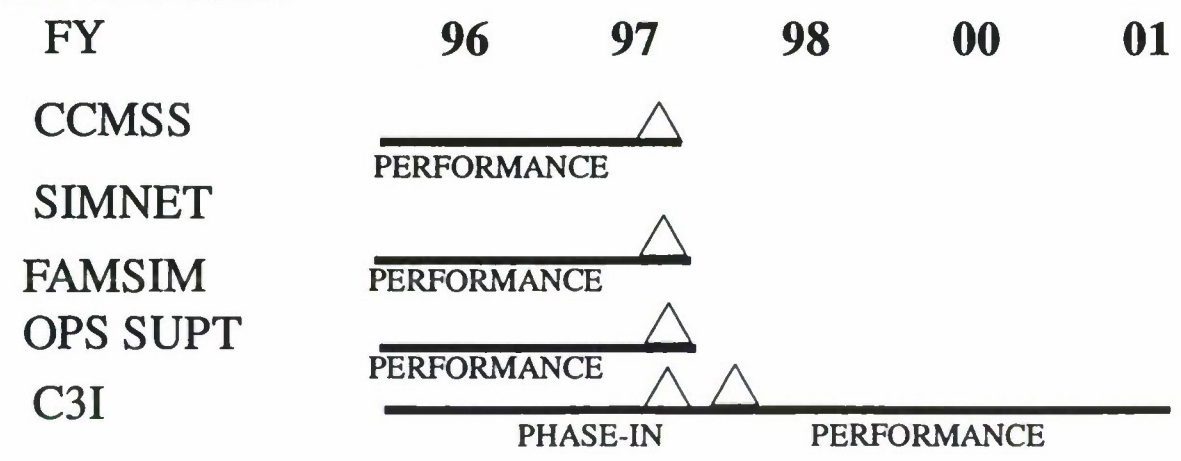
# LIFE CYCLE CONTRACTOR SUPPORT COMMAND, CONTROL, COMMUNICATION and INTELLIGENCE (C3I)

**PURPOSE:**

PROVIDE CONSOLIDATED LOGISTICS SUPPORT FOR THE FOLLOWING DEVICES/SYSTEMS:

| | | | |
|---|---|---|---|
| SIMNET | BMMT | NCSRT | DSCS |
| BBS | BEMT | ARTBASS | CTS |
| CBS | G2WORKSTATION | TACSIM | TQT/MT |
| SEOS | GUARD RAIL/MT | FAM OPS SUPT | IEWCS |
| MMT | JANUS | UAV | CCTT (QUICKSTART) |
| | | | CCTT |

**TIMELINES:**




**FUNDING:** OMA 1 YEAR AND 4 OPTION YEARS ( HIGH RANGE $150M - 200M))

11 APR 96

# LIFE CYCLE CONTRACTOR SUPPORT
# COMMAND, CONTROL, COMMUNICATION & INTELLIGENCE
# (C3I)

## ADDITIONAL FUNCTIONS SUPPORTED WITHIN THE CONTRACT

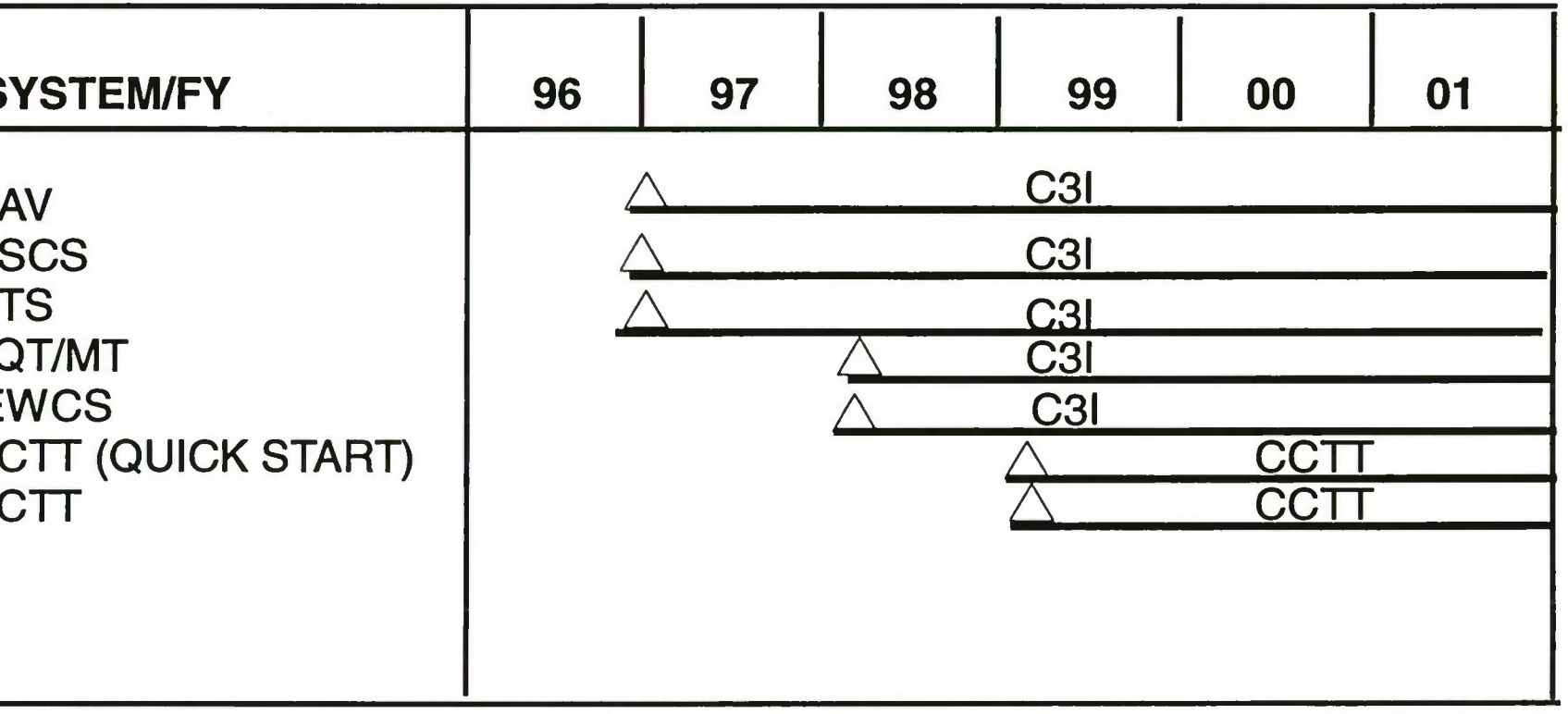
- OPERATIONAL SUPPORT FOR FAMSIM DEVICES
- DEINSTALLATION-MOVEMENT-REINSTALLATION
- MODIFICATIONS/UPGRADES
- STOW / AWE / FORCE XXI

# PLAN FOR LIFE CYCLE CONTRACTOR SUPPORT COMMAND, CONTROL, COMMUNICATION AND INTELLIGENCE (C3I)

| SYSTEM/FY | 96 | 97 | 98 | 99 | 00 | 01 |
|---|---|---|---|---|---|---|
| SIMNET | SIMNET △ | | | C3I | | |
| BBS | CCMSS △ | | | C3I | | |
| CBS | CCMSS △ | | | C3I | | |
| SEOS | CCMSS △ | | | C3I | | |
| MMT | CCMSS △ | | | C3I | | |
| BMMT | CCMSS △ | | | C3I | | |
| BEMT | CCMSS △ | | | C3I | | |
| G2 WORK STATION | CCMSS △ | | | C3I | | |
| GRMT | CCMSS △ | | | C3I | | |
| JANUS | CCMSS △ | | | C3I | | |
| NCSRT | CCMSS △ | | | C3I | | |
| ARTBASS | CCMSS △ | | | C3I | | |
| TACSIM | CCMSS △ | | | C3I | | |
| FAM OPS SUPT | OPS △ | | | C3I | | |

11 APR 96

# PLAN FOR LIFE CYCLE CONTRACTOR SUPPORT COMMAND,CONTROL, COMMUNICATION and INTELLIGENCE (C3I)



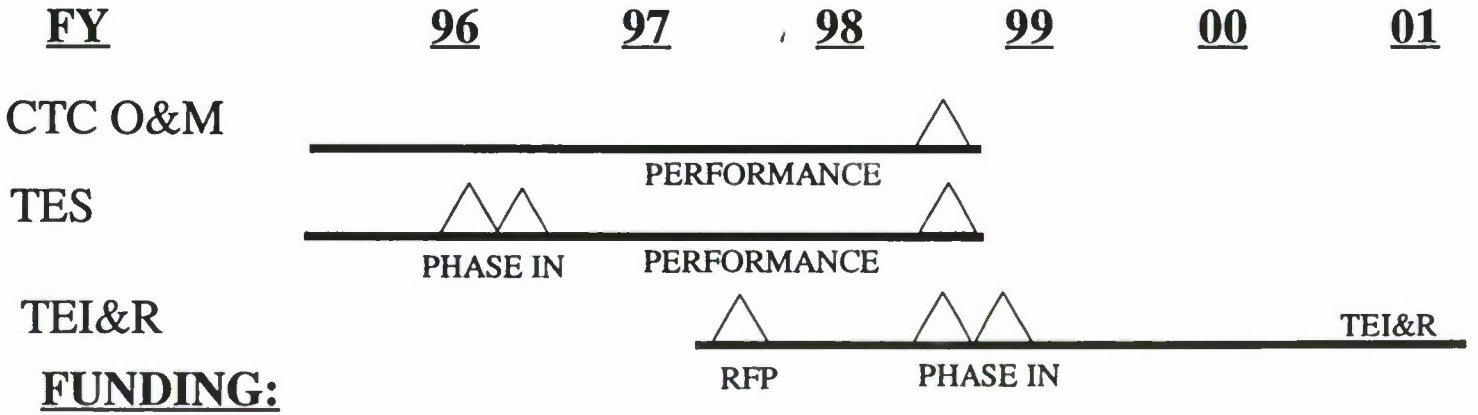
# LIFE CYCLE CONTRACTOR SUPPORT TACTICAL ENGAGEMENT, INSTRUMENTATION & RANGES (TEI&R)

**PURPOSE:**

PROVIDE CONSOLIDATED LOGISTICS SUPPORT FOR THE FOLLOWING DEVICES/SYSTEMS:

| | | | |
|---|---|---|---|
| NTC-IS | OCCS | MILES | AGES II |
| CMTC-IS | JRTC-MOUT | MITS | PRIME |
| JRTC-IIS | JRTC-IS | SAWE-MILESII | MILES 2000 |
| AWSS | ASET IV | TWGSS/PES | |

**TIMELINES:**




**FUNDING:**

OMA 1 YEAR & 4 OPTION YEARS (HIGH RANGE - GREATER THAN $200M)

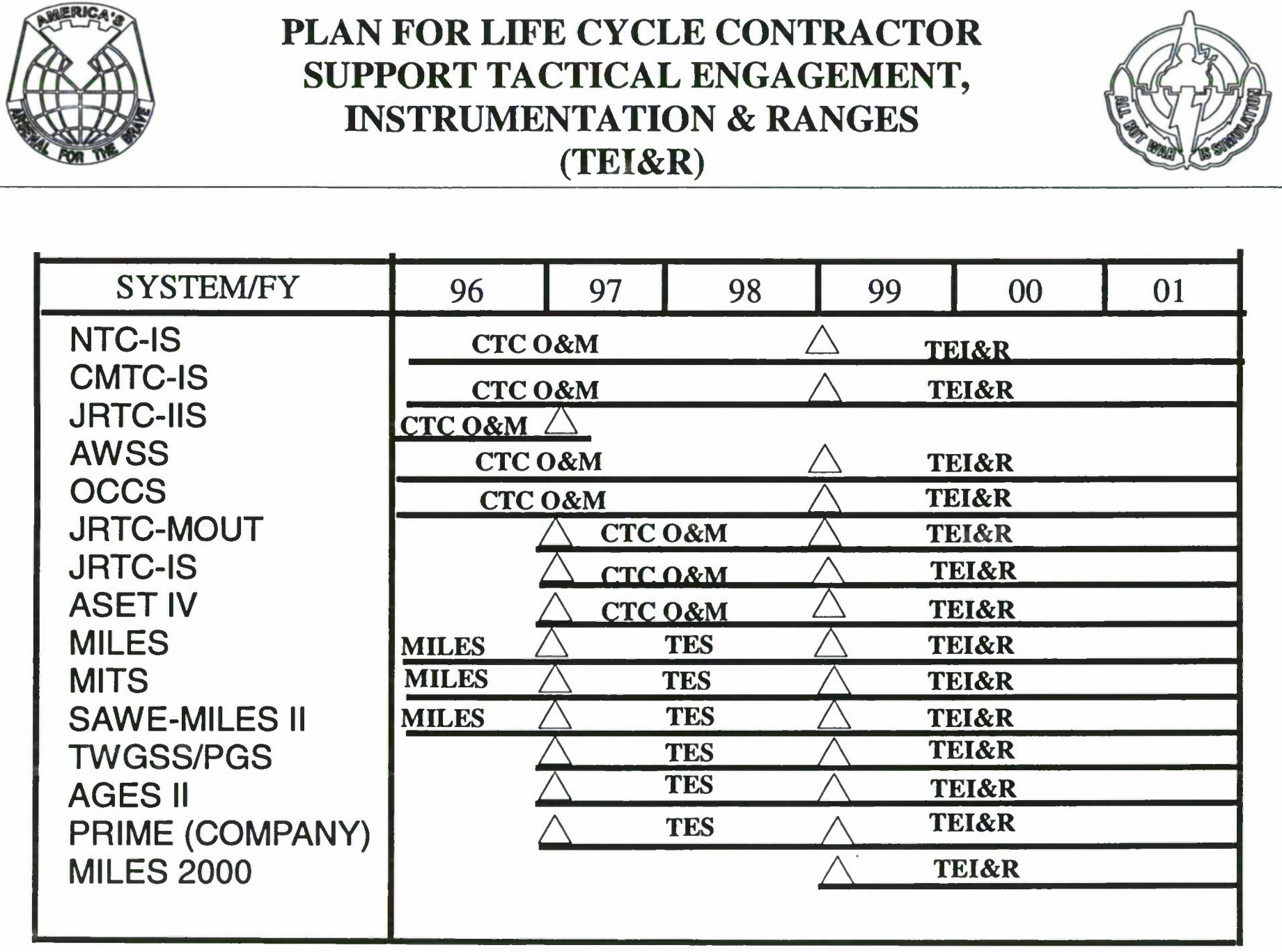
11 APR 96

# LIFE CYCLE CONTRACTOR SUPPORT TACTICAL ENGAGEMENT, INSTRUMENTATION & RANGES (TEI&R)

## ADDITIONAL SUPPORT

- FIRE MARKER PERSONNEL
- MOTOR POOL MAINTENANCE
- MILES WAREHOUSE
- TAF ANALYSTS
- SMOKE PLATOON PERSONNEL
- SAWE/MILES II TRAINERS
- VIDEO PRODUCTION PERSONNEL
- TAKE HOME PACKAGES
- CLASSROOM 21
- CIVILIANS ON THE BATTLEFIELD

# PLAN FOR LIFE CYCLE CONTRACTOR SUPPORT TACTICAL ENGAGEMENT, INSTRUMENTATION & RANGES (TEI&R)




11 APR 96

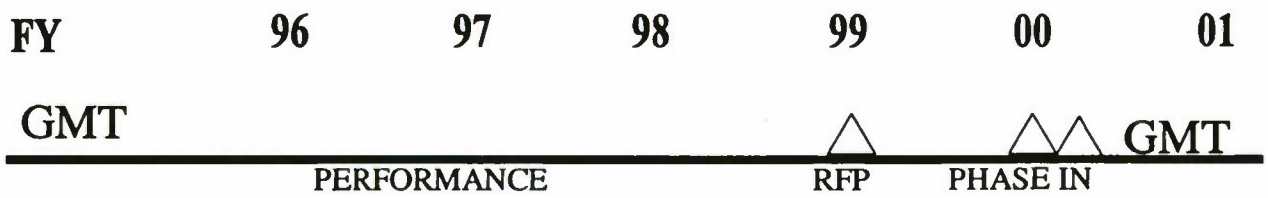
# LIFE CYCLE CONTRACTOR SUPPORT GUNNERY/ MAINTENANCE TRAINERS (GMT)

## PURPOSE:

PROVIDE CONSOLIDATED LOGISTICS SUPPORT FOR THE FOLLOWING DEVICES/SYSTEMS:

| | | | |
|---|---|---|---|
| COFT | M1 TDT | TSV | A-FIST |
| ARMOR/BFV MT | M60A3 TDT | EST | M1A2 MAINT TNR |
| VIGS | TSFO | PGTS | M2A3/M3A3 MAINT |
| GUARDFIST I & II | PALADIN IMT | AGTS/M1A2 | FSCATT |
| FATMT | PGT | AGTS/BFV | MK-19 GUNNERY |

## TIMELINES:




## FUNDING:

OMA 1 YEAR & 4 OPTION YEARS ( LOW RANGE $25M - 50M)

11 APR 96

# LIFE CYCLE CONTRACTOR SUPPORT
# GUNNERY MAINTENANCE TRAINERS
# (GMT)

## ADDITIONAL SUPPORT FUNCTIONS AVAILABLE

- TRAINER SITE SURVEY
- TRAINER PAD CONSTRUCTION
- TRAINER RELOCATION (DEINSTALLATION, MOVEMENT AND INSTALLATION
- TRAINER MODIFICATION KITS: DEVELOPMENT
  PRODUCTION
  INSTALLATION
- SURGE SUPPORT
- INSTRUCTOR / OPERATORS

11 APR 96

# PLAN FOR LIFE CYCLE CONTRACTOR SUPPORT
# GUNNERY/MAINTENANCE TRAINERS
# (GMT)

| SYSTEM/FY | 96 | 97 | 98 | 99 | 00 | 01 |
|---|---|---|---|---|---|---|
| COFT | | GMT | | | △ | GMT |
| ARMOR/BFV MT | | GMT | | | △ | GMT |
| VIGS | | GMT | | | △ | GMT |
| GUARDFIST I & II (PROTO) | | GMT | | | △ | GMT |
| FATMT | | GMT | | | △ | GMT |
| M1 TDT | | GMT | | | △ | GMT |
| M60A3 TDT | | GMT | | | △ | GMT |
| TSFO | | GMT | | | △ | GMT |
| PALADIN IMT | | GMT | | | △ | |
| PGT | △ | GMT | | | △ | GMT |
| TSV | TSV △ | GMT | | | △ | GMT |
| EST | EST △ | GMT | | | △ | GMT |
| PGTS | PGTS | △ | GMT | | △ | GMT |
| AGTS/M1A2 | AGTS | △ | GMT | | △ | GMT |

11 APR 96

# PLAN FOR LIFE CYCLE CONTRACTOR SUPPORT GUNNERY/MAINTENANCE TRAINERS (CONT) (GMT)

| SYSTEM/FY | 96 | 97 | 98 | 99 | 00 | 01 |
|---|---|---|---|---|---|---|
| AGTS/BFVS | | | | △ GMT | △ | GMT |
| A - FIST | | | | △ GMT | △ | GMT |
| M1A2 MAINT TNR | | | | △ GMT | △ | GMT |
| M2A3/M3A3 MAINT TNR | | | | | △ | GMT |
| FSCATT | | | | | △ | GMT |
| MK-19 GUNNERY TNR | | | | | | △ GMT |

# DIRECTORATE FOR RESEARCH AND ENGINEERING MANAGEMENT

## ADVANCE PLANNING BRIEFING FOR INDUSTRY

## 2 MAY 1996

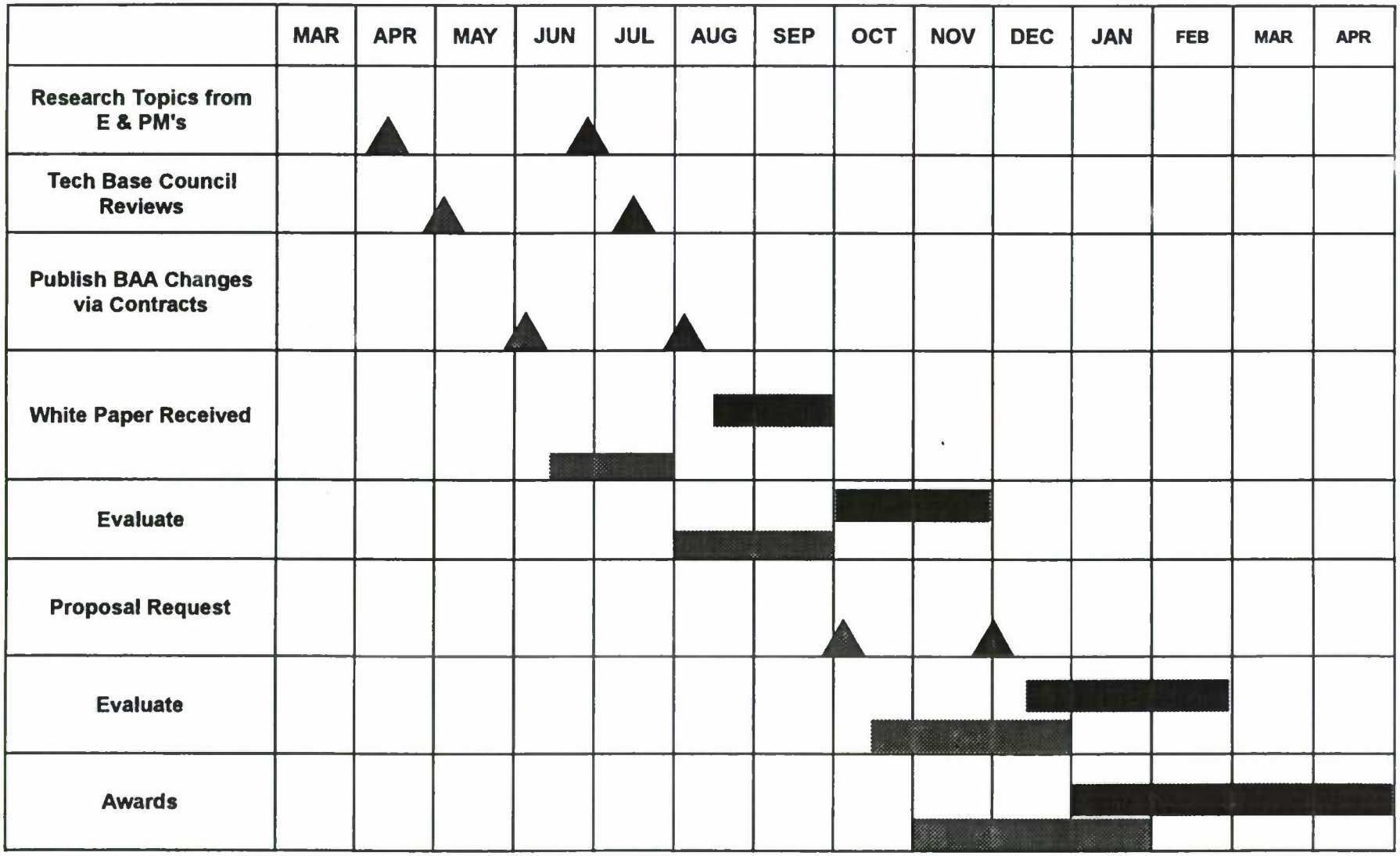
EDWIN A. TRIER
DIRECTOR

STRICOM
17 APR 96

# TOPICS

- Tech Base
  - Process
  - Focus
  - Leveraging
- New Solicitation
  - Requirements
  - Acquisition Strategy
  - Time Lines

# BAA Update & Contract Schedule



# BAA FOCUS

- STRICOM Focus Call: 12 April1996
- Determine Focus for FY 97: Early May 1996
- Provide Focus to Industry: Early June 1996
  - CBD
  - Bulletin Board
- Review FY 96 White Papers
- Review FY 97 Submittals

# COOPERATIVE AGREEMENT UNDER 10 U.S.C. 2371 & 2358

- Legal instrument transferring "thing of value" from the government to a recipient
- Substantial government involvement
- Not a substitute for a procurement contract
- Suitable for research relative to a specific system or area of potential interest

# ADVANTAGES TO STRICOM

- Relationship allows sharing of costs between partners - leverage R&D funds - leverage private sector investment
- Exchanges of personnel - free flow of ideas between researchers
- Shares risk between all parties - everyone has a stake in outcome
- Agency retains control of research direction and emphasis but takes advantage of industry technological lead

# ADVANTAGES TO INDUSTRY

- Dual use technologies developed can be used by Industry to develop commercial products
- Provides Industry partner with better understanding of technologies developed and military applications
- Use of Government funds to aid commercial R&D efforts
- Non-traditional military contractors encouraged to participate because commercial practices can be utilized
- Strengthens commercial and military industrial base

# ADVANTAGES TO ACADEMIA

- Increase their research funds
- Allows for student - government - industry exchange of personnel
- Create areas of expertise at a particular university

# INTELLECTUAL PROPERTY PROVISIONS

- Flexibility in Intellectual Property Rights
- General government goals
  - Gain knowledge of latest innovative research and technology
  - Stimulate joint government/industry/academia development of emerging dual-use technologies
  - Enable parallel development of commercial and military applications
  - Strike a reasonable balance between commercial and military interests

# LIFE CYCLE ENGINEERING SUPPORT CONTRACT

## WHY NOW?

- CECOM/Nations Contract Ends July 1997
- STRICOM/Nations has Low Ceiling
- SEI Contract - Retain Focus on DIS

# Life Cycle Engineering Support Contract

## Purpose

- Provide Engineering Support to STRICOM Programs in All Phases of the Life Cycle
- Supplement STRICOM Engineering Resources to Meet Customer Needs
  - Customers are Project Managers for Developmental Systems and Logistics Directorate for Deployed Systems
- Services to be Provided Include:
  - Systems, Project and Software Engineering Management
  - Software and System Architecture
  - Independent Verification and Validation
  - Specialty Engineering (Safety, Security, Facilities, EMI, Audio/Visual, Communications, Artificial Intelligence, Domain Engineering ...)
  - Post Deployment Software Support

# CONTRACT FEATURES

- Competitive
- Best Value
- Past Performance Review
- Acquisition Streamlining Concepts will be Employed
- Proposal Will Consist of Both Written and Oral Presentations of Technical and Management Areas
- Basic Plus Four Options

# PRELIMINARY SCHEDULE MILESTONES

- Issue Synopsis — May 96
- Solicitation Package on Bulletin Board — July 96
- Release RFP — September 96
- Contract Award — April 97

# PM ITTS



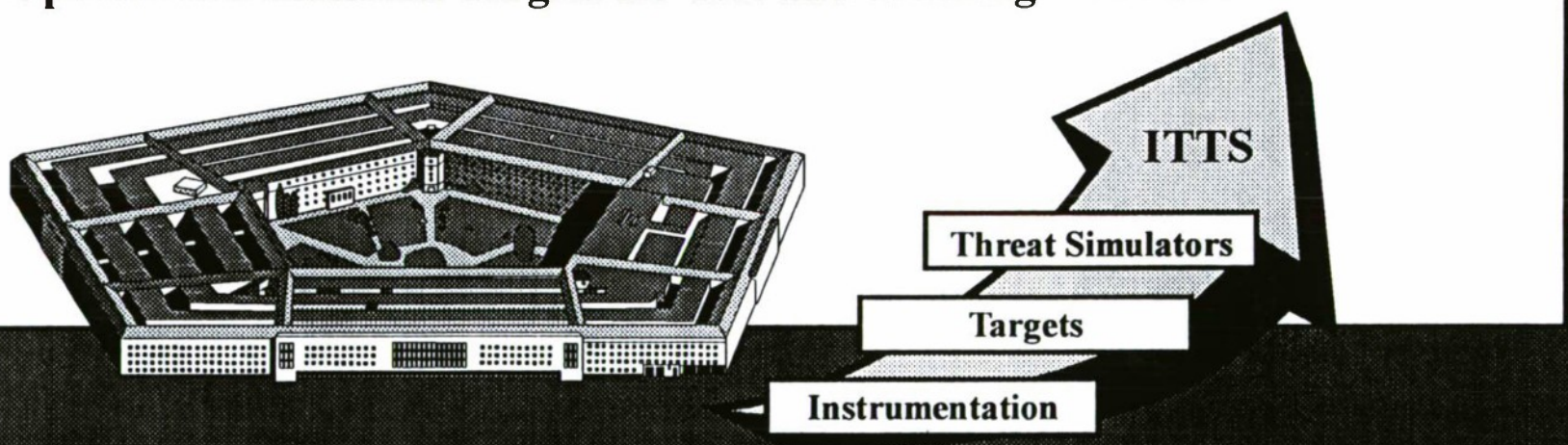

## Advanced Planning Brief for Industry (APBI) 1996

# Mission

- **Manage the Research, Development, Design, Acquisition, Fielding, Modification and Capability Accounting of Targets, Threat Simulators and Major Instrumentation Required for Technical and Operational Test and Evaluation for the U.S. Army.**

- **Operate and Maintain Targets for Test and Training**









## PM ITTS (5)

**COL Stephen S. Overstreet**
Project Manager for Instrumentation, Targets and Threat Simulators
ATTN: AMCPM-ITTS
12350 Research Parkway, Orlando, FL 32826-3276
(407) 384-5250 DSN 970-5250
e-mail: overstrl@stricom.army.mil

**DPM: Henry I. Jehan, Jr.**
(407) 384-5251 DSN 970-5251
e-mail: jehanh @stricom.army.mil

## IMO (16)

**Mr. J. Russell Longenbach**
Instrumentation Management Office
ATTN: AMCPM-ITTS-I
12350 Research Parkway
Orlando, FL 32826-3276
(407) 380-8434/8452 DSN 960-8434/8452
e-mail: longenbr@stricom.army.mil

## TMO (53)

**Mr. Heber R. Norckauer, Jr.**
Targets Management Office
ATTN: AMCPM-ITTS-Q
Redstone Arsenal, AL 35898-7458
(205) 876-4077/7764 DSN 746-4077/7764
e-mail: norckaub@stricom.army.mil

## TSMO (41)

**Mr. Mark C. Tutten**
Threat Simulator Management Office
ATTN: AMCPM-ITTS-S, Building 4497
Redstone Arsenal, AL 35898-7461
(205) 876-9656 DSN 746-9656 x200
e mail: tuttenm@stricom.army.mil

TSS2/23/96-0031




# CONTRACTS




- PM ITTS submits contracts thru various procurement agencies
- **STRICOM/ NAWC** - Instrumentation
- **MICOM** - Targets & Threat Simulators
- **TECOM Test Centers** - Range facilities & Instrumentation

# MAJOR TECHNOLOGY THRUSTS

- **Build the Virtual Test Environment**
  - VPG
  - VTTR
- **Populate the Virtual Test Environment**
  - Virtual Targets & Threat Simulators
- **Interface between existing Instrumentation and the Virtual Environment**
  - Live to Virtual, Live to Constructive

# MAJOR TECHNOLOGY THRUSTS

- **Embedded Instrumentation**
  - HST
- **Emerging Technology Instrumentation**
  - Future Armor concepts
  - Liquid Propellants
  - Electric Drive Vehicles
  - Advanced Sensors
- **RF Injection for open air testing**

# Instrumentation Management Office

- Develops Major Instrumentation
  - Electromagnetic, Optical, Audio, Mechanical, Etc.
  - Detect, Measure, Record, Telemeter and Process
  - Analyze Physical Parameters or Quantities
  - Used for Technical or Operational Testing

# HARDENED SUBMINIATURE TELEMETRY AND SENSOR SYSTEM DEVELOPMENT

- **Program Description:** Define, design, develop, build and quantify prototype high G hardened data acquisition and telemetry system.

- **Timeline:**
  - Estimated RFP release: Feb 97
  - Estimated Contract Award: Oct 98

- **Funding:** Low

- **Status:** Ongoing Concept Exploration

# FREQUENCY SURVEILLANCE SYSTEM

- **Program Description:** Surveillance of radio frequency spectrum used at WSMR.

- **Timeline:**
  - Estimated RFP Release: July 96
  - Estimated Contract Award Date: Feb 97

- **Funding:** Low

- **Status:** On Schedule

# VIRTUAL TEST
# &
# TRAINING RANGE

- **Program Description:** This project will develop a concept and provide a demonstration of the techniques for creating a virtual test range environment. The project will explore the extension of the concept to interface with and support training.

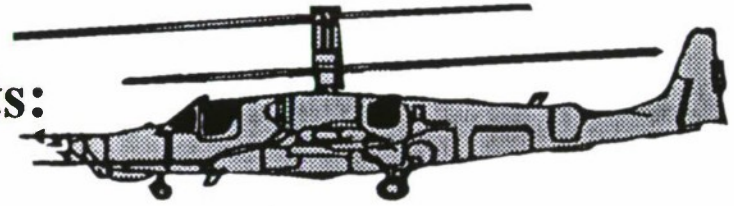
- **Timeline:**
  - Estimated RFP Release: 4Q FY98
  - Estimated Contract Award: 2Q FY99

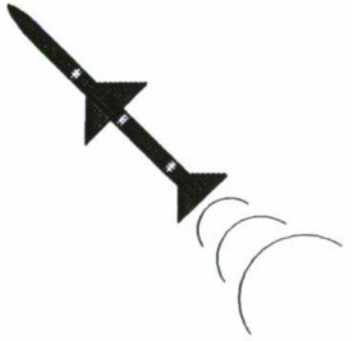
- **Funding:** Low

- **Status:** Performing requirements analysis

# Targets Management Office

- Develops, Fields, and Supports:





  - Ground or Airborne Vehicles
  - Supports Testing and Training
  - Economical and Expendable
  - Remotely Controlled or Stationary
  - Often Destroyed in Test

- DOD Lead for Ground and Rotary Winged Target Development

# AERIAL TARGET FLIGHT SERVICES

- **Program Description:** Operation and maintenance contract for MQM-107/ MQM-34 subscale fixed wing target, QH-50 subscale helicopter targets, and the QUH-1 full scale rotary wing target. Target aircraft are flown at numerous CONUS/ OCONUS ranges to support ADA training, RDTE for the tri-services and foreign military sales requirements.

- **Timeline:**
  - Estimated RFP Release: Jan 99
  - Estimated Contract Award: Oct 99

- **Funding:** Low

- **Status:** On Schedule

# HOKUM-X

- **Program Description:** Production of a full scale aerial target which emulates the Russian Ka-50 Helicopter. It will support major weapon system T&E.

- **Timeline:**
  - Estimate RFP Release: March 97
  - Estimate Contract Award: Jan 98

- **Funding:** Low

- **Status:** On Schedule

# BATS

(Ballistic Aerial Target System)

- **Program Description:** A versatile, troop operated training target that can be flown at low and medium altitudes to simulate the trajectory of high performance threat aircraft. The BATS is used for training personnel in air defense gunnery and is mainly used for infrared homing systems such as CHAPARRAL and STINGER.

- **Timeline:**
  - Estimated RFP Release: March 97
  - Estimated Contract Award: Jan 98

- **Funding:** Low

- **Status:** On Schedule

# MQM-107
# PRODUCTION

- **Program Description:** Manufacture and integration of MQM-107 airframes, plus engineering services. Separate contract for engines.

- **Timeline:**
  - Estimated RFP Release: Jan 99
  - Estimated Contract Award: Jan 00

- **Funding:** Low

- **Status:** On Schedule

# SCORING SERVICES AND HARDWARE

- **Program Description:** Scoring field operational services, engineering services and hardware required to support gunner qualification against sub-scale aerial targets. Contractor support entails the operation and maintenance of ground stations and scoring devices tailored to each target.

- **Timeline:**
  - Estimated RFP Release: May 96
  - Estimated Contract Award: Oct 96

- **Funding:** Low

- **Status:** On Schedule

# NEW GENERATION ARMY TARGETRY SYSTEM (NGATS)

- **Program Description:** Mobile, transportable, and deployable system capable of continuous support during unit training periods. Will be used by unit commanders to support training worldwide during live fire exercises at home station, combat training centers and OCONUS theaters of operation.

- **Timeline:**
  - Estimated RFP Release: Nov 96
  - Estimated Contract Award: May 97

- **Funding:** Low

- **Status:** On Schedule

# FOREIGN MATERIEL SPARES

- **Program Description:** These spares are required for the operation and maintenance of a fleet of Confederation of Independent States, wheeled and tracked military vehicles.

- **Timeline:**
  - Estimated RFP Release: May 96
  - Estimated Contract Award: Dec 96

- **Funding:** Low

- **Status:** On Schedule

# TOWED TARGET ENGINEERING SERVICES

- **Program Description:** Engineering services required in support of the TMO Towed Target and infrared devices program.

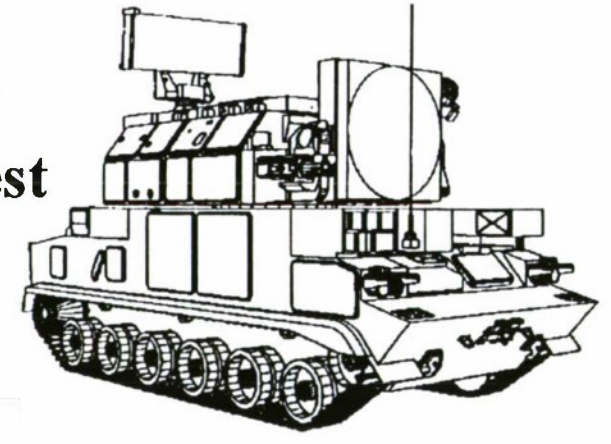
- **Timeline:**
  - Estimated RFP Release: Jan 97
  - Estimated Contract Award: Oct 97

- **Funding:** Low

- **Status:** On Schedule

# Threat Simulator Management Office

- **Develops and Fields**
  - **Representative Threat Systems**
  - **Provides Appearance of Actual Threat**
  - **Prescribed Degree of Fidelity**
  - **Used for Testing and Training**
  - **Small Numbers and Relatively Expensive/Not Destroyed in Test**



# XM17S
# THREAT SIMULATOR

- **Program Description:** Advanced Air-Defense System. Follow-on to the XM11S.

- **Timeline:**
  - Estimated RFP release: 1Q FY97
  - Estimated Contract Award: 1Q FY98

- **Funding:** Low

- **Status:** On schedule




# VIRTUAL THREAT SIMULATIONS



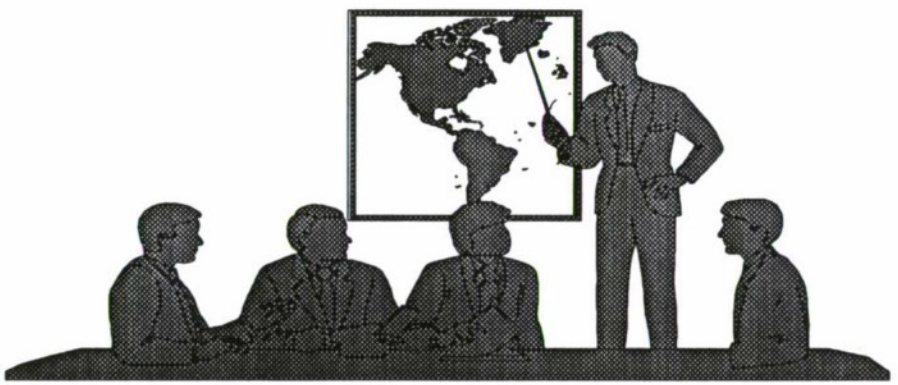

- **Program Description:** Virtual simulations to fill battlefield densities of current & future Army Threat Simulators (i.e. XM330S, XM43S, XM15S, XM17S, XMC3S).

- **Timeline:**
  - Estimated RFP release: 1Q FY97
  - Estimated Contract Award: 1Q FY98

- **Funding:** Currently unfunded

- **Status:** Ongoing requirements analysis

# TEAMING INTO THE 21ST CENTURY WITH



# Distributed Interactive Simulation (DIS)

INDUSTRY DAY
30 APRIL - 2 MAY

Mr. Stan Goodman
Deputy PM DIS
STRICOM

# ORGANIZATION







PM DIS
COL JIM ETCHECHURY

DEP PM DIS
MR. STAN GOODMAN

PM CAAN
LTC Jan Drabczuk

PM STOW
LTC Steve Hicks

APM DIS
MR. Kent Brookins



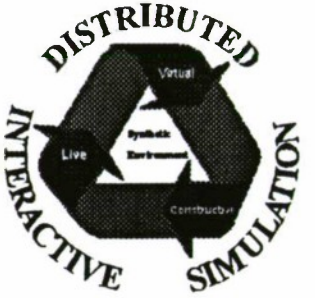

# PM DIS MISSIONS




- DoD Lead For DIS Standards & Architecture.
- Army DIS Technical Manager.
- Maintains Army Modernization Plan & MDEP.
- Supports Army Master Plan.
- DIS Technical Configuration Management.
- Special Programs - - ModSAF and BLRSIM.
- Coordinates DoD Exploitation of Emerging Technologies.
- Collaborates with DMSO on HLA and DARPA on Developing Research.




# PM DIS CONTRACT SUPPORT




- ADST II :
  - Base Year and Four One-year Options.
  - Indefinite Quantity DO Structure for Rapid Response / Flexibility.
  - Three Testbeds and Contractor Base Facility.
  - Conducts Customer Funded Developmental Work using DIS Technologies.
- SEI:
  - Systems Engineering & Integration Services for DIS Technical Integration.
  - Supports DIS Configuration Management and Databases.
  - Supports ModPlan Investment & Technical Strategy.
  - Executes Systems Experiments, Testing Support, VV & A Studies.

# BACKGROUND

## HISTORY

- March 1990, technology program established to develop DIS technology.
- March 1991, ADST contract awarded to Loral.
- ADST II is a follow-on to the current ADST contract.
- Awarded to Lockheed Martin 23 October 1995.

## ADST II Scope

- Provide Laboratory Sustainment Effort (LSE) and Delivery Orders (DOs) Support.
- Changes incorporated to allow for a more robust LSE capability.

## ADST II MISSION

- Provide an environment for development of technology to support DIS objectives resulting in increased credibility and use of the synthetic environment.
- Operational responsibility to support the existing CDFs and development of any future CDFs.



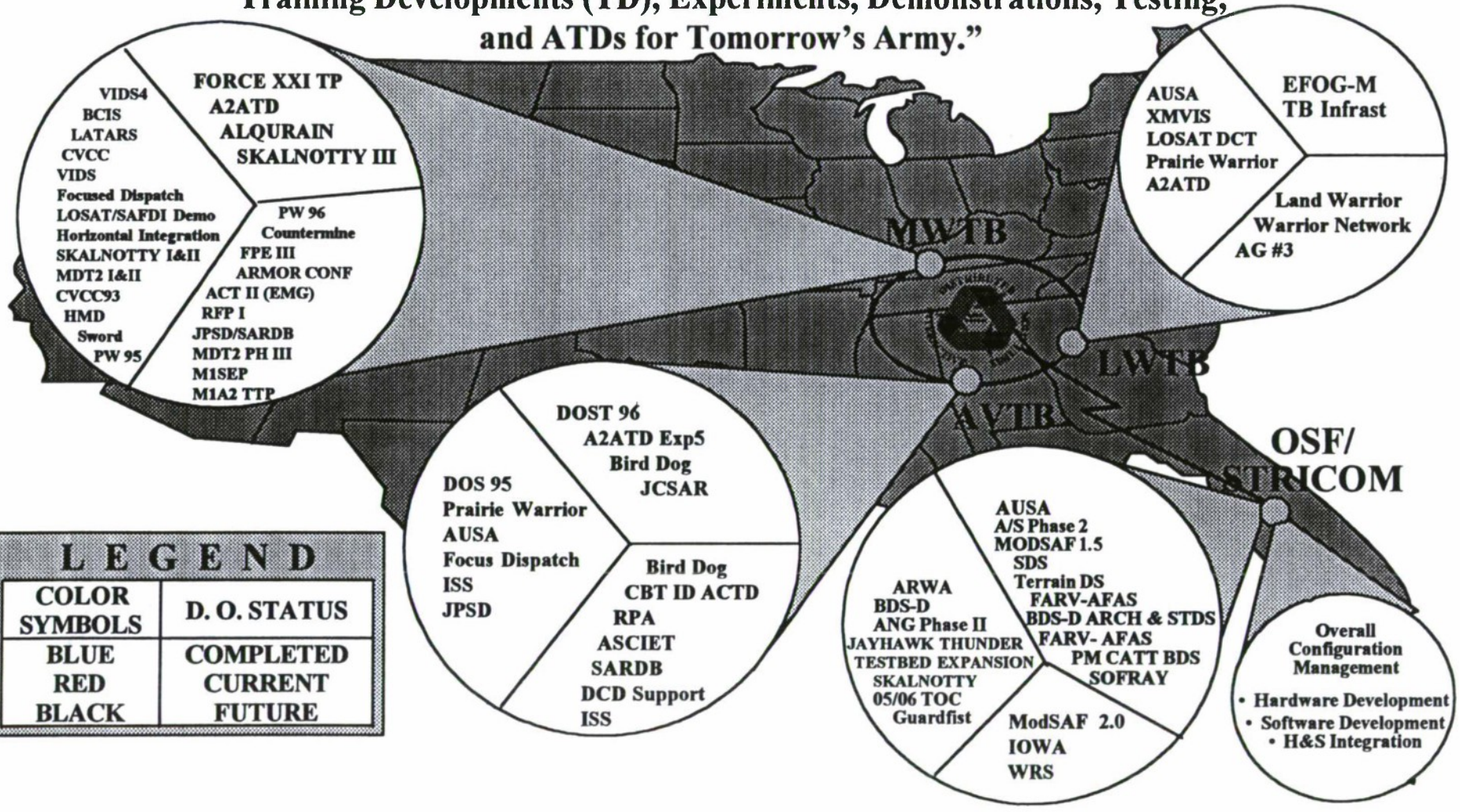

# DELIVERY ORDER TYPES




| TYPE | CONTENT | COMPLEXITY FACTORS |
|---|---|---|
| **Feasibility Analysis Study** | •Continued Reqs Analysis.<br>•Identify/Evaluate Alternatives.<br>•WS/ROM for Alternatives.<br>•FAS Report. | •Study Oriented.<br>•No Development. |
| **Standard DO** | •Engineering Development.<br>•Experiment/Exercise.<br>•Infrastructure Upgrades. | •Formal Qual/Acceptance Testing.<br>•SW Standards.<br>•CM Process.<br>•System Engineering Oversight. |
| **Fast Prototype** | •Significant Unknowns.<br>•Engineering Development Models.<br>•Cyclic Design-Build-Test.<br>•Early Confirmation of Approach. | •Cyclic Design-Build-Test.<br>•Prototype Control CM.<br>•Transition to Deliverable Product. |
| **Demonstration** | •Typically No Engineering Dev.<br>•Similar to Fast Prototype.<br>•Demonstration of Capabilities.<br>•Use of Existing Assets. | •Resource Scheduling.<br>•Equipment Movement.<br>•WAN Connectivity.<br>•Use of Existing Assets. |
| **Site Activation** | •Mission Analysis.<br>•Equipment Analysis.<br>•Facilities Planning.<br>•Reallocation of Assets. | •Mission Analysis.<br>•Equipment Analysis.<br>•Facilities Planning.<br>•Reallocation of Assets. |

# U.S. ARMY CORE DIS FACILITIES (CDFs)

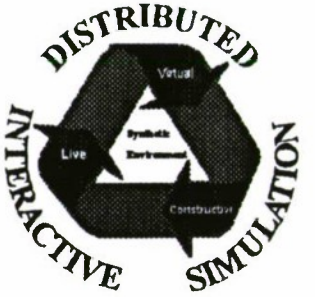
**"Where Today's Army conducts Combat Development (CD), Materiel Developments (MD), Training Developments (TD), Experiments, Demonstrations, Testing, and ATDs for Tomorrow's Army."**




| LEGEND | |
|---|---|
| COLOR SYMBOLS | D. O. STATUS |
| BLUE | COMPLETED |
| RED | CURRENT |
| BLACK | FUTURE |




# TECHNICAL ISSUES




- **Interoperability and Terrain Database Standards:**
  - –Dissimilar Simulators (STRICOM focus to date on Virtual).
- **Modular, Reusable Software:**
  - –Object-Oriented, MODSIM-Like Host Software.
  - –Software Methodologies (Reengineering, Reuse, Domain Analysis).
- **Reconfigurable Level II Simulators for Sites**:
  - –Rotary Wing, Armor, Fire Control, C2, CSS.
- **Dynamic Environment**:
  - –Terrain Atmosphere; Impact on IG.
- **Seamless Simulation (Virtual <-> Constructive <-> Live):**
  - –STRICOM focus on Virtual SIM and Virtual <-> Constructive Link.
- **SAFOR:**
  - –Functionality Enhancements and C3.
  - –SAF Merge (MODSAF and CCTT SAF).
- **Virtual Reality**:
  - –Focused on Dismounted Infantry Applications.
- **Architecture Enhancements**:
  - –High Level Architecture/ Platform Prototype Federations.
- **Validated Models.**

# THE TEAM

LOCKHEED MARTIN

*SAIC*
Science Applications International Corporation

USERS

Core Team

**INDUSTRY**

TASC, Hughes Training, LB&M, Mystech, Booz-Allen, Cubic Defense Systems, UDLP, CGSD, RTI, Contraves, Paradigm, Dual, Nations, Sikorsky, MaK Consortium, Quality Research.

Pre-Qualified Teammates

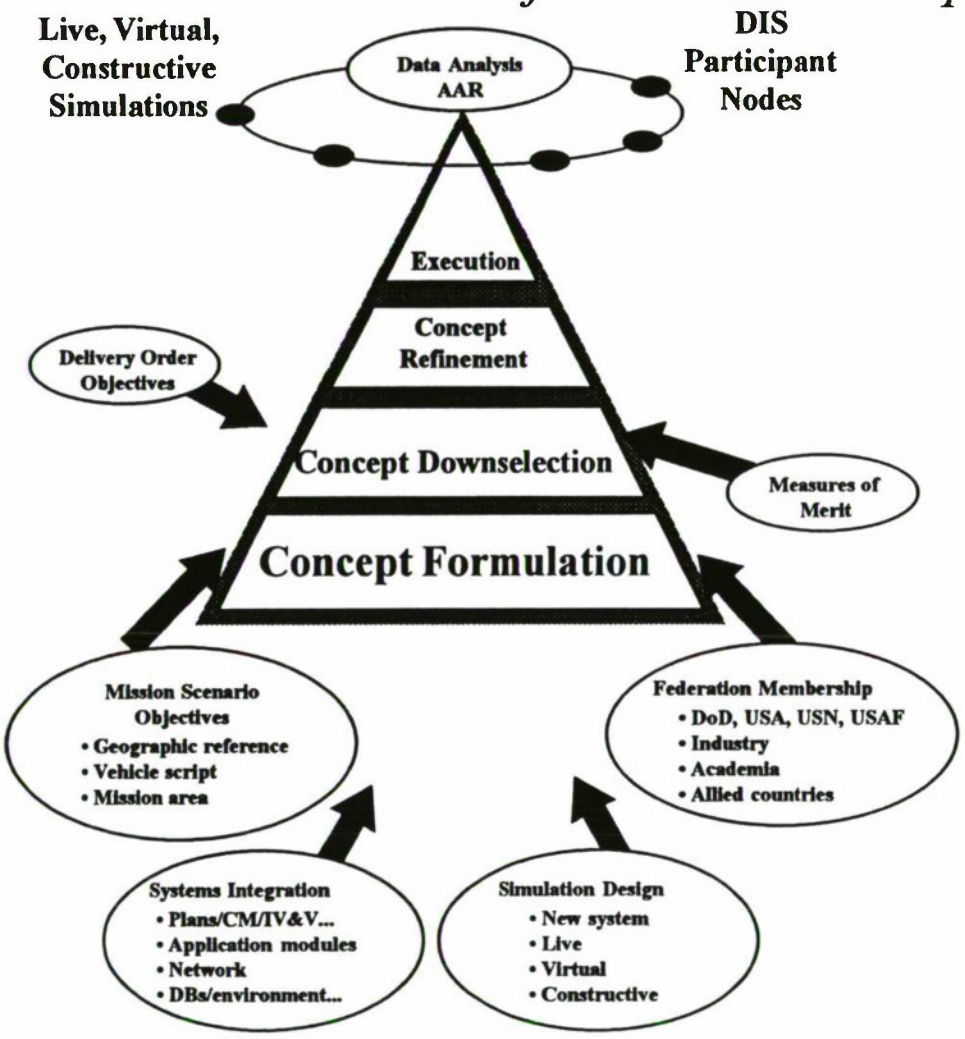
| INDUSTRY | ACADEMIA |
|---|---|
| SARCOS, Nichols Research, Sparta, Veda, Acusoft, Illusion, Coleman Research, Loral, Cubic Applications. | U of Iowa, Clark University, Duke, U of Central Florida, Georgia Tech, U of Michigan, North Carolina State U, U of North Carolina, North Carolina A&T, Norfolk State University, U of Pennsylvania. |

Other Potential Teammates

**GOAL: Provide STRICOM with the optimum set of available resources to effectively support the DIS synthetic environment operation and maximize further development.**

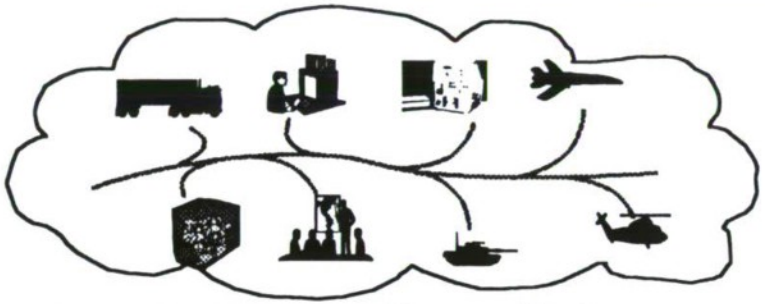
# THE SEI PROGRAM

*"Foster the use of DIS across the acquisition and operational domains!"*




- **End-to-end SEI Support Exercises & Milestones**
- **Core Services --**
  - Education
  - Data collection and dissemination
  - Integration support
  - Certification testing
  - Correlation metrics
  - Test support
- **SE/SI Services--**
  - Long-range planning
  - Requirements analysis
  - Feasibility analysis
  - Architecture development
  - Proof-of-concept demonstrations
  - Independent V&V
  - Technology insertion
  - Integration of simulators(ions), instrumentation, and training devices
  - Exercise support
  - After action review

# OPPORTUNITIES



- ★STAY EDUCATED!
- ★STAY CURRENT!
- ★KNOW DIS!

**A Global Network of Seamless, Interactive, dissimilar Sim Sites working on the key phases of Military Ops.**



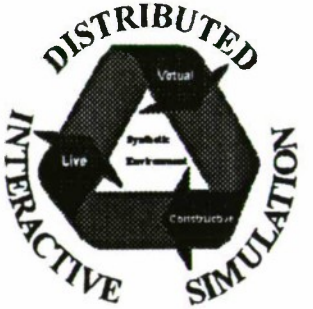

**TEAM AS SUB-CONTRACTOR:**
- **✓ADST II.**
- **✓SEI.**

- **✓SIGN CRDAs.**
- **✓AMC RDECs.**
- **✓TRADOC BATTLE LABS**






# DIS INFORMATION MANAGEMENT




- **DMSTTIAC.**
- **RDE-NET.**

# INTRODUCTION TO DMSTTIAC

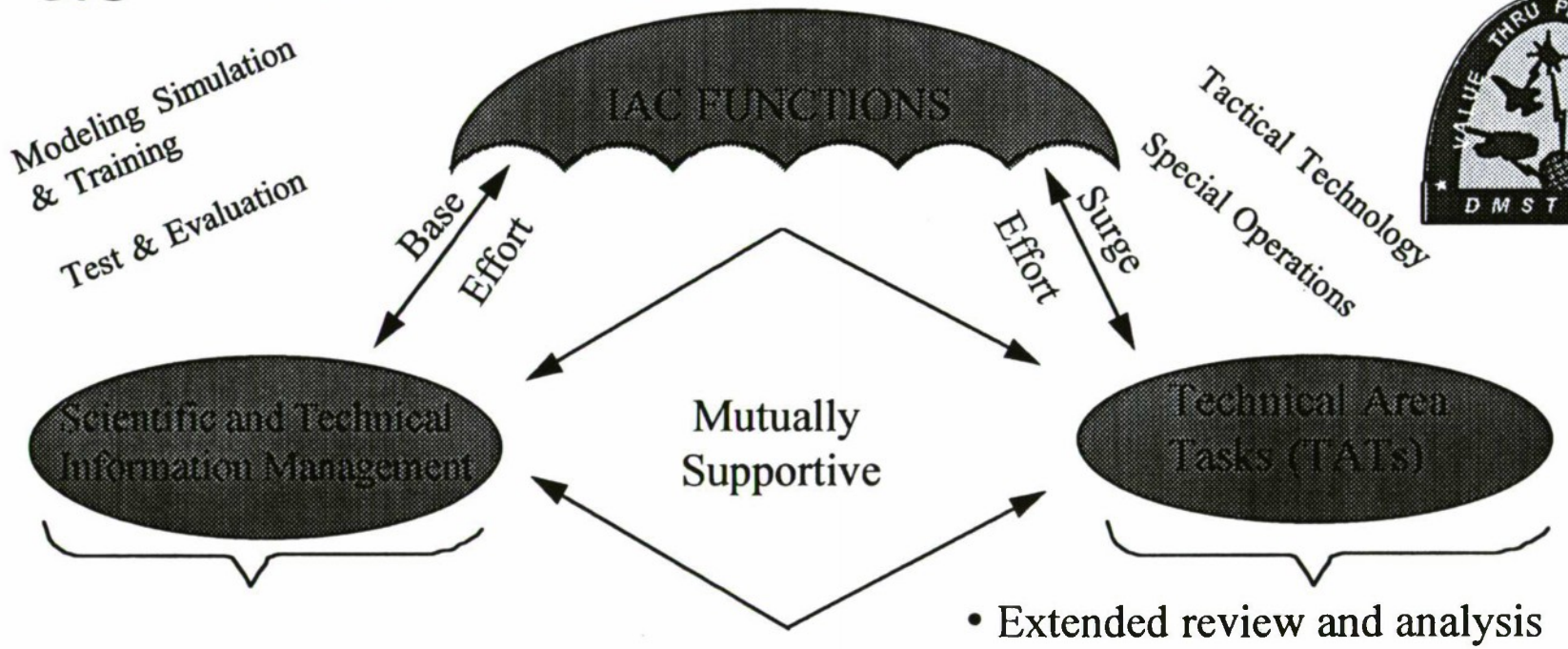
- Technical domains of DMSTTIAC:
  - –Modeling, Simulation, and Training.
  - –Test and Evaluation.
  - –Tactical Technology.
  - –Special Operations.
- Chartered by the Office of the Under Secretary of Defense Acquisition and Technology OUSD (A&T).

| • Key Organizations | |
|---|---|
| Sponsors | Defense Technical Information Center (DTIC).<br>Defense Modeling and Simulation Office (DMSO). |
| Technical Management | *Smart Weapons Management Office (SWMO).* |
| Contracting Agency | Defense Electronics Supply Center (DESC). |
| Operator | IIT Research Institute (IITRI) along with 14 Team members. |

DMSTTIAC provides context-sensitive and timely information to customers through its technical experts, databases, and models.

**POC: William G. Grigson, DMSTTIAC Orlando Operations, TEL 407-282-6400**

# DMSTTIAC STRUCTURE




- Information acquisition, Access, and Collection.
- Information Processing and Management.
- Information Analysis.
- Information Dissemination.

- Extended review and analysis specific topics.
- Quick response to a Specific Requiring Agency need (s).
- Tasks individually tailored to need.
- Requires a staff of specialized experts.

**Standardization Enhancement**
**Improved Productivity of Scientific and Engineering Community**

# RESEARCH, DEVELOPMENT & ENGINEERING NETWORK (RDE-NET)

**Purpose.**

Improve Integration of DIS within AMC.

Promote AMC Synthetic Environment Capabilities.

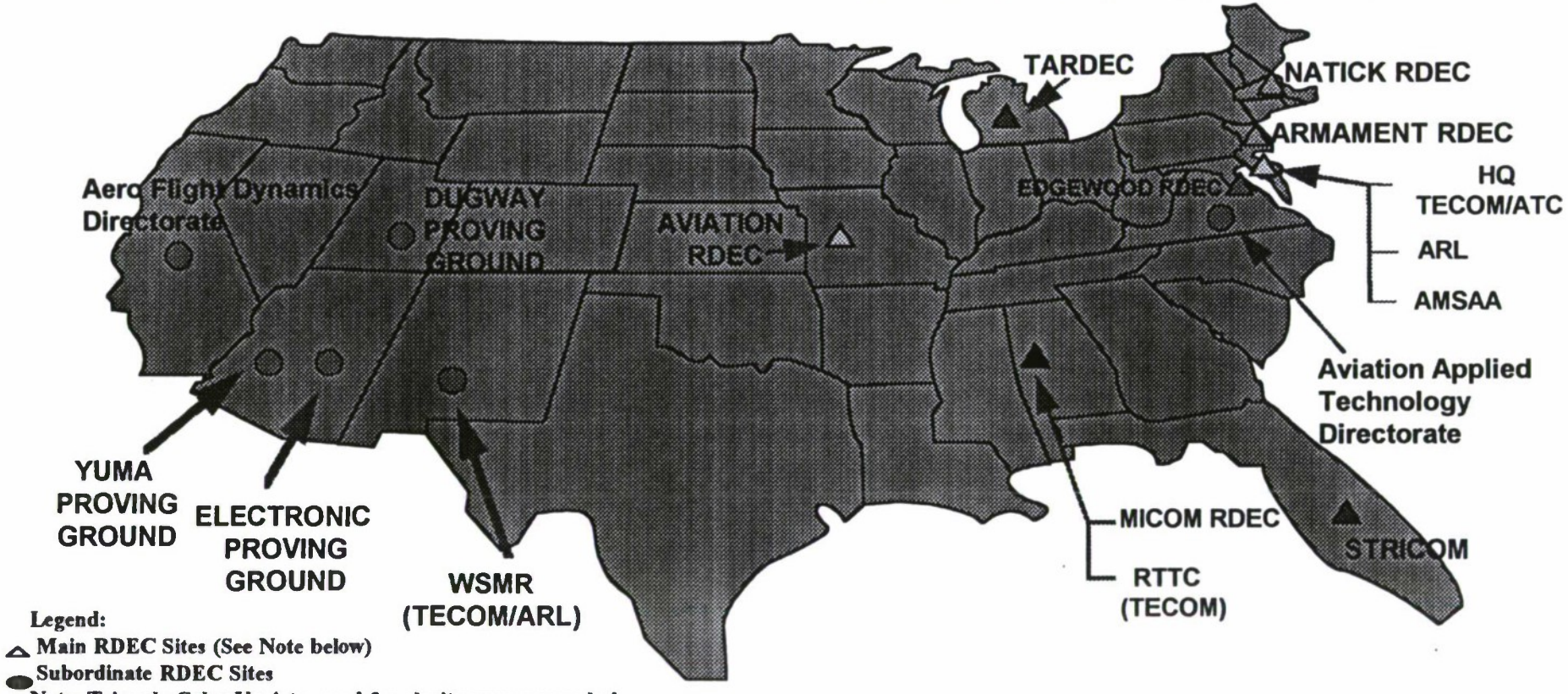
**Composition of Data.**

DIS, M&S, and Instrumentation facilities/hardware.

General Capabilities and Organization Structure.

Activities & Exercises (AWEs, ATDs, Experiments).

DIS Lessons Learned, AAR, Calendar of Events.




**Legend:**

△ Main RDEC Sites (See Note below)

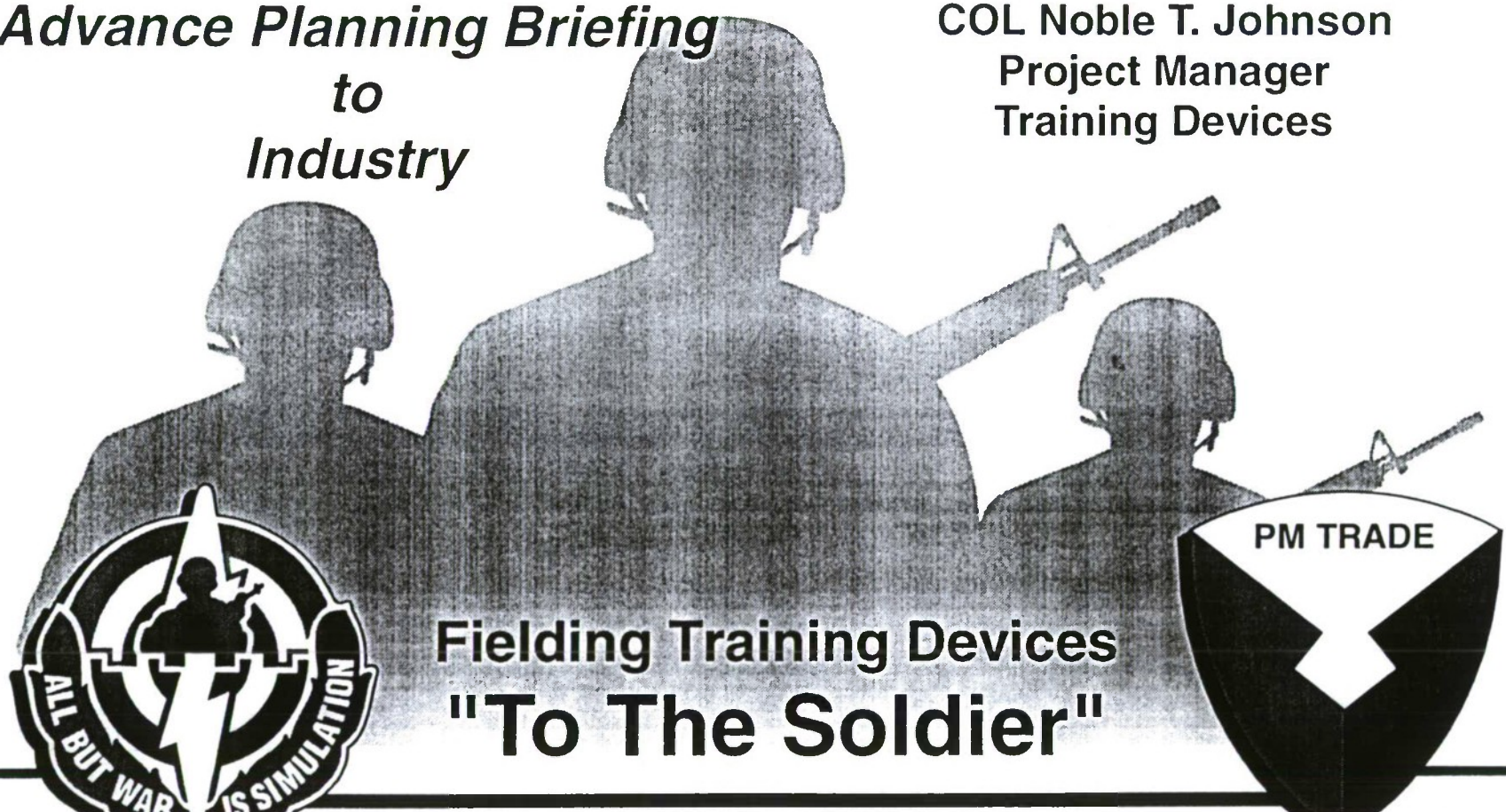
● Subordinate RDEC Sites

**Note: Triangle Color Variety, used for clarity purposes only !**

# PM TRADE

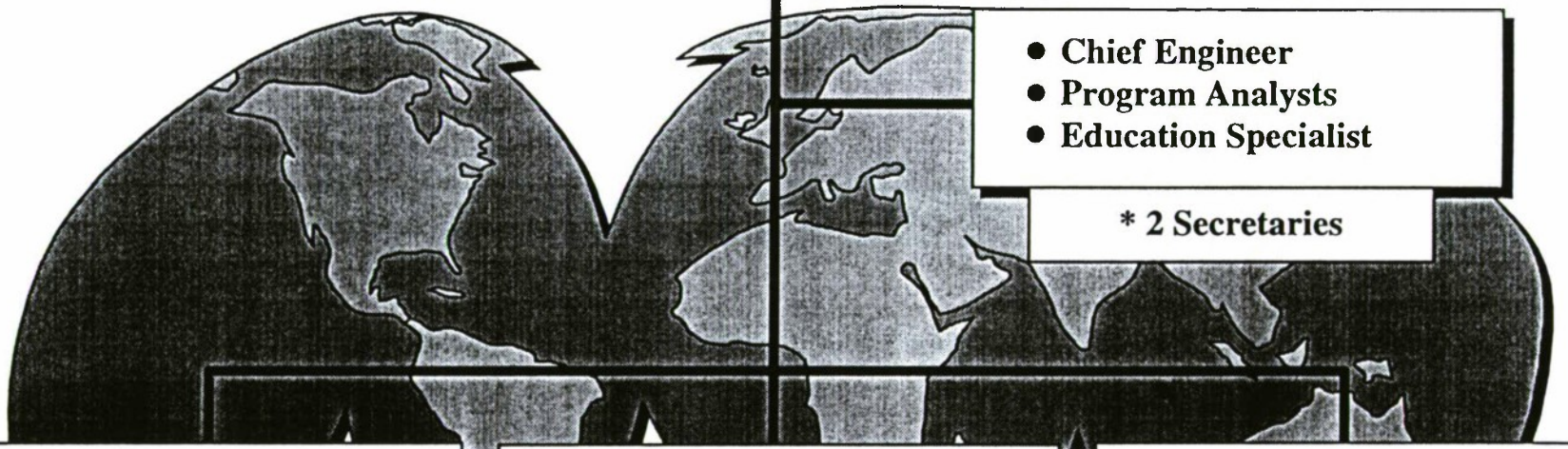
*Advance Planning Briefing*
*to*
*Industry*

COL Noble T. Johnson
Project Manager
Training Devices



## Fielding Training Devices
## "To The Soldier"

# PM TRADE
## COL Noble T. Johnson (PM)
## Mr. Bill Rucker (DPM)



- Chief Engineer
- Program Analysts
- Education Specialist

* 2 Secretaries

**PM GCTS**
**Ground Combat Training Systems**
**LTC James Taylor (PM)**
**Ph. 380-8074 / E-mail TAYLOR3**
**MR. Tony Bradley (DPM)**

* 13 Project Directors
* 3 Secretaries
* 1 SME

**PM CSTS**
**Combat Support Training Systems**
**LTC Steve Kessinger (PM)**
**Ph. 380-8181 / E-mail KESSINGS**
**Mr. Steve Milburn (DPM)**

* 12 Project Directors
* 2 Secretaries

**PM ACTS**
**Air & Command Training Systems**
**LTC Craig Hanford (PM)**
**Mr. Don Jones (DPM)**
**Ph. 380-8079 / E-mail JONES1**

* 11 Project Directors
* 2 Secretaries

# Changes to Active Programs

**CSTS**
Combat Support Training Systems

**CCTS**
Close Combat Training Systems

**ACTS**
Air Combat Training Systems

**Unchanged**

**GCTS**
Ground Combat Training Systems

**ACTS**
Air & Command Training Systems

MK 19 → **MK 19**

GUARDFIST II → **GUARDFIST II**

FSCATT → **FSCATT**

**PRIME** ← PRIME

DSCS → **DSCS**

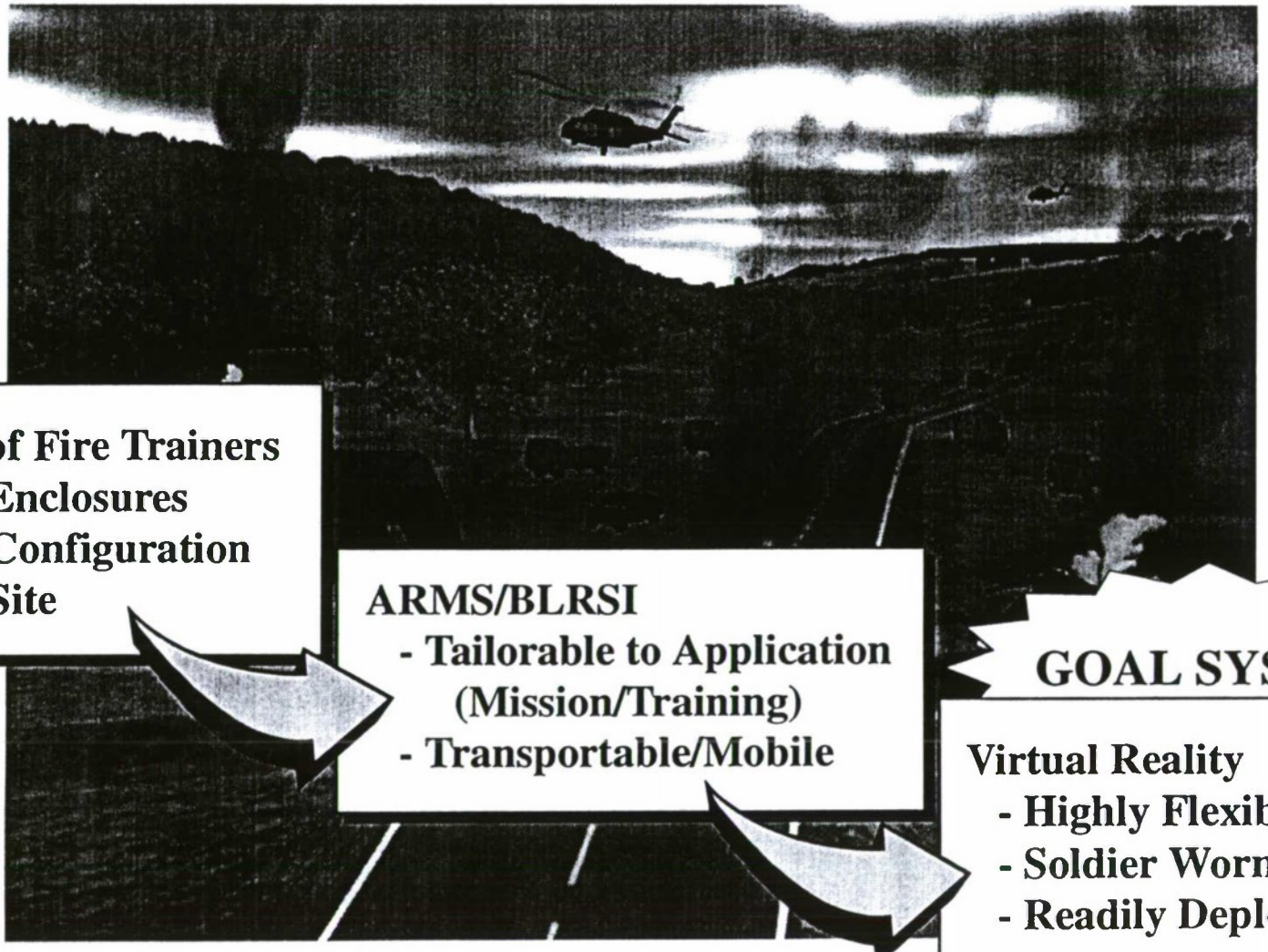
# Alignment to Battle Operating Systems (BOS)




| CSTS | GCTS | ACTS |
|---|---|---|
| TESS | Maneuvers ( - Aviation) | Aviation |
| PRIME | Fire Support | Air Defense |
| MILES | Mobility / Countermobility | Intelligence |
| CTCs | Survivability | Battle Command |
| | | Combat Service Support |

# General Trend for Future Training Devices

## Current State of Affairs



**Conduct of Fire Trainers**
- Rigid Enclosures
- Fixed Configuration
- Fixed Site

**ARMS/BLRSI**
- Tailorable to Application (Mission/Training)
- Transportable/Mobile

**GOAL SYSTEM**

**Virtual Reality**
- Highly Flexible
- Soldier Worn
- Readily Deployable

# Aircraft Embedded Sensors Save Training Hardware Dollars



AVR II Tactical Detector
AVR IIA Tactical / Training Detector
All Aircraft

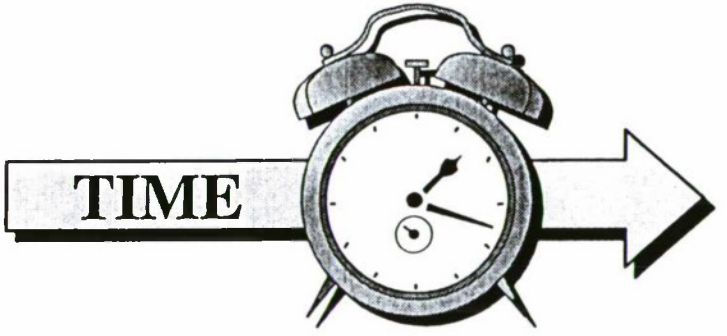
More Aircraft with Embedded Detectors



Training Instrumentation Costs



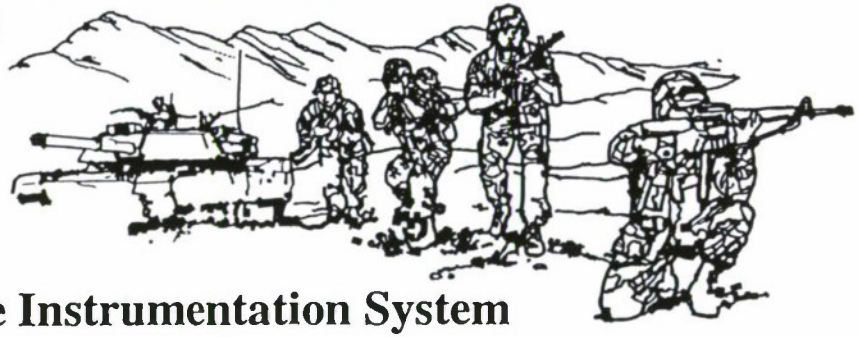
Savings to
PMAEC
OPA & O$M




Fewer AGES Detector
Belts Results in OPA &
OMA Savings

# IR&D Activities of Interest to PM TRADE

- Thermal Imagery for Trainers
  - Thermal Images for Tactical & Gunnery Trainers
  - Trainers for the Operation of Thermal Sights
- Lightweight & Safe Batteries for On-Soldier Systems
- Low Intrusion Instrumentation for Vehicles
  - Wireless LANS
  - KITS to be Installed During Retrofit / Upgrades
- Advanced Target Signatures
  - Thermal
  - Movement Behavior
  - Dirty Battlefield
  - Holographic Images



- Homestation / Transportable Instrumentation System
- Deployable Training Range
- Training Analysis Feedback Systems (TAAF Analyst Assistant Systems)
- Simple Troop Movement Models to Energize Activities at CTCs

# Airborne Reconnaissance Low - Multifunction Sustainment Training System (ARL-M-STS)

- **PROGRAM DESCRIPTION: Train crew members in the operation and employment of the ARL-M RC7 aircraft and mission equipment, for both mission-specific qualification training and sustainment training.**

- **TIMELINE**
  - **RFP** **FY97**
  - **Contract Award** **FY97**
  - **Prototype** **FY98**
  - **Full Production** **FY99**

- **FUNDING: Medium**

- **STATUS: Concept Formulation Phase Completed.**
  **Milestone decision will be determined by PM ARL.**
  **Funding must secured by PM ARL.**

# Secure Mobile Anti-Jam Reliable Terminal - Tactical Training Device (SMART-T)

- **PROGRAM DESCRIPTION: Train operator through DS maintenance for the SMART-T satellite communication system for the designated Military Operation Speciality personnel.**

- **TIMELINE**
  - **RFP** **FY97**
  - **Contract Award** **FY97**
  - **Prototype** **FY98**
  - **Full Production** **FY99**

- **FUNDING: Medium**

- **STATUS: Concept Formulation Phase**
  **Training device study presently in progress.**
  **Will determine number and cost/schedule.**

# Wolverine Trainer
# (also known as Heavy Assault Bridge)

- PROGRAM DESCRIPTION:
  - Institutional training of MOS 12F on crew operations and maintenance based at Ft. Leonard Wood, Missouri

- TIMELINE:
  - RFP FY 98
  - EMD FY 98
  - PROD FY 99

- FUNDING: Medium

- STATUS:
  - Combined effort between STRICOM/PM TRADE, PM WOLVERINE and the Army Engineering School
  - Contract Award estimated 2nd QTR FY98

# Grizzly Trainer
# (also known as Breacher)

- PROGRAM DESCRIPTION:
  - Institutional and unit training to qualify operators and maintainers based at Ft. Leonard Wood, Missouri
  - Unit sustainment training will supplement and reinforce the skills learned in the institutional course
  - Embedded training as a Pre-Planned Product Improvement

- TIMELINE:
  - RFP FY 98
  - EMD FY 98
  - PROD FY 99

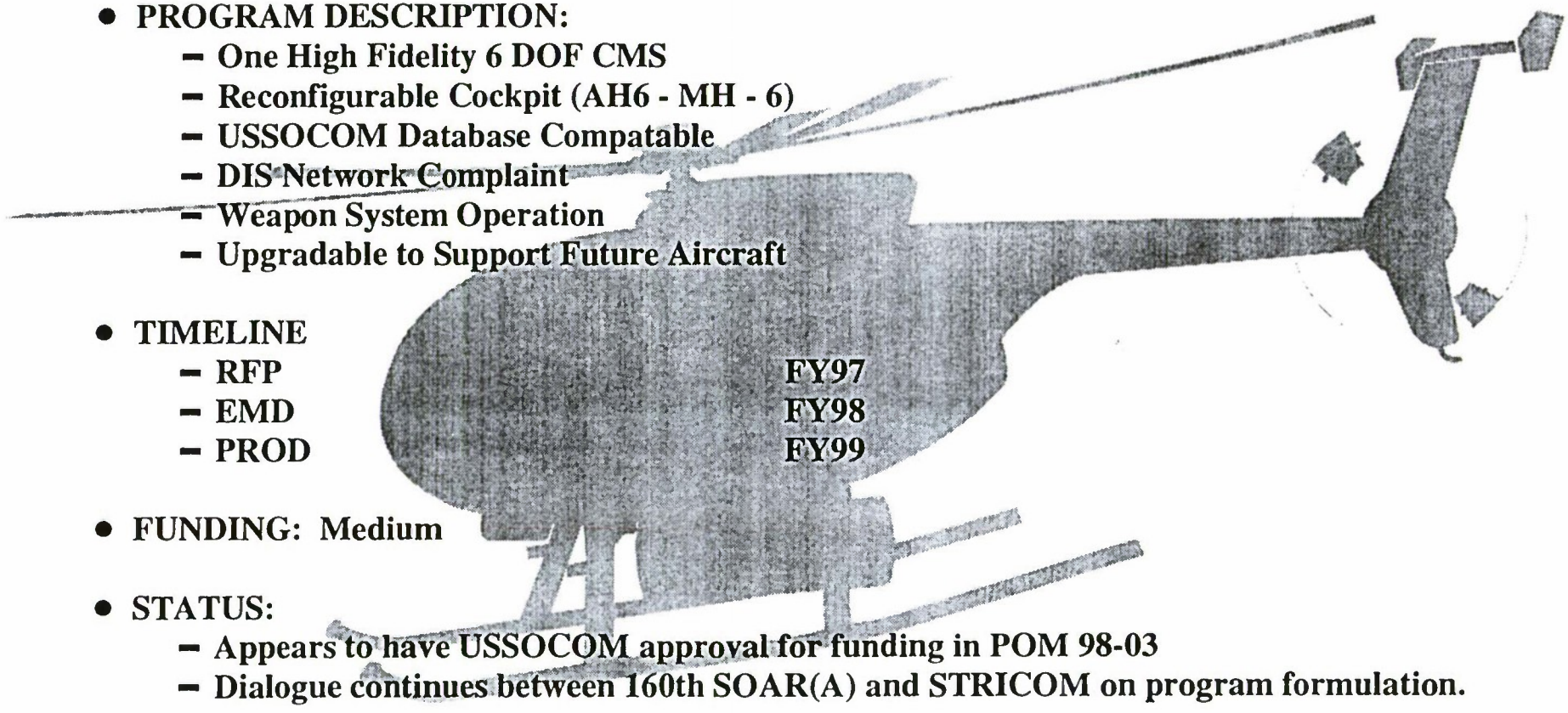
- FUNDING: Medium

- STATUS:
  - Combined effort between STRICOM/PM TRADE, PM Grizzly and the Army Engineering School
  - Contract Award estimated 2nd QTR FY98

# Light Assault/Attack (Little Bird) Reconfigurable Combat Mission Simulator

PM TRADE

- PROGRAM DESCRIPTION:
  - One High Fidelity 6 DOF CMS
  - Reconfigurable Cockpit (AH6 - MH - 6)
  - USSOCOM Database Compatable
  - DIS Network Complaint
  - Weapon System Operation
  - Upgradable to Support Future Aircraft



- TIMELINE
  - RFP FY97
  - EMD FY98
  - PROD FY99
- FUNDING: Medium
- STATUS:
  - Appears to have USSOCOM approval for funding in POM 98-03
  - Dialogue continues between 160th SOAR(A) and STRICOM on program formulation.

# COMBAT MANEUVER TRAINING CENTER
## LIVE FIRE INSTRUMENTATION SYSTEM (CMTC LF-IS)

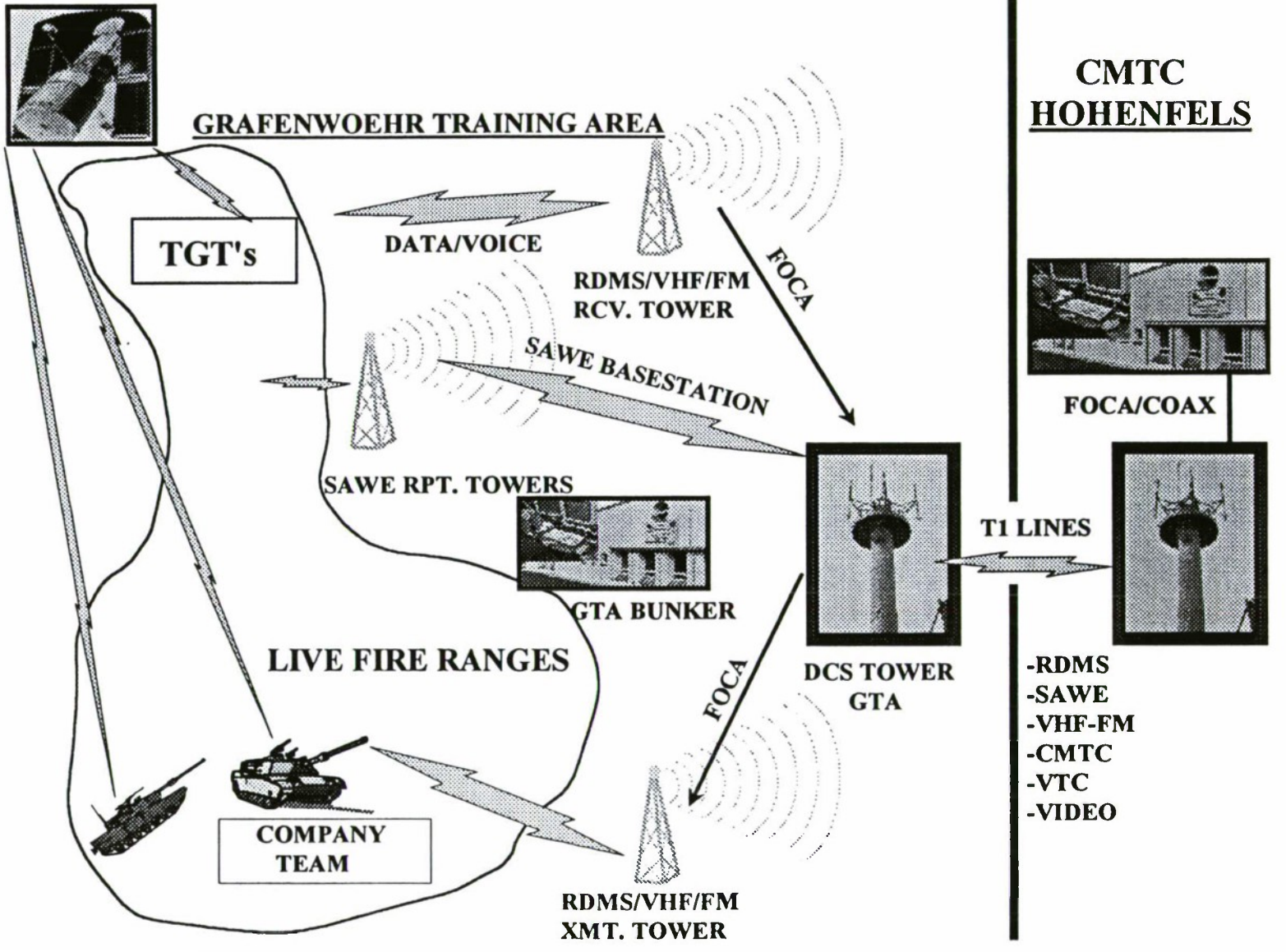
- **PROGRAM DESCRIPTION:**
  - Provides similar objective feedback to training commanders via After Action Reports as Maneuver Training Systems at Hohenfels
  - Links Live Fire Targeting, ranges and Grafenwoehr assets to the Hohenfels complex
  - Provides increased levels of collective training proficiency in Combined Arms Warfighting by incorporating Indirect Fire Effects during Live Fire exercises

- **TIME LINE**
  - MNS: FY 96
  - ORD: FY 96
  - RFP: FY 01
  - EMD: FY 02-04
  - PROD: FY 04-07

- **FUNDING:** High

- **STATUS:**
  - ORD in approval cycles, concept exploration underway

# COMBAT MANEUVER TRAINING CENTER
## LIVE FIRE INSTRUMENTATION SYSTEM



# NATIONAL TRAINING CENTER - INSTRUMENTATION SYSTEM

- PROGRAM DESCRIPTION:
  - Design, develop and field an Integrated Instrumentation system
  - Consists of functions:
    - Exercise planning
    - System preparation
    - Exercise management
    - Training performance feedback
    - System support
  - Collects data from:
    - Tactical Engagement Simulation (TES)
    - Observer/Controllers (OC)
    - External Systems
    - Joint Instrumentation Systems

- TIME LINE
  - ORD: FY 95
  - C/E: FY 96-01
  - EMD: FY 02-03
  - PROD: FY 04-07

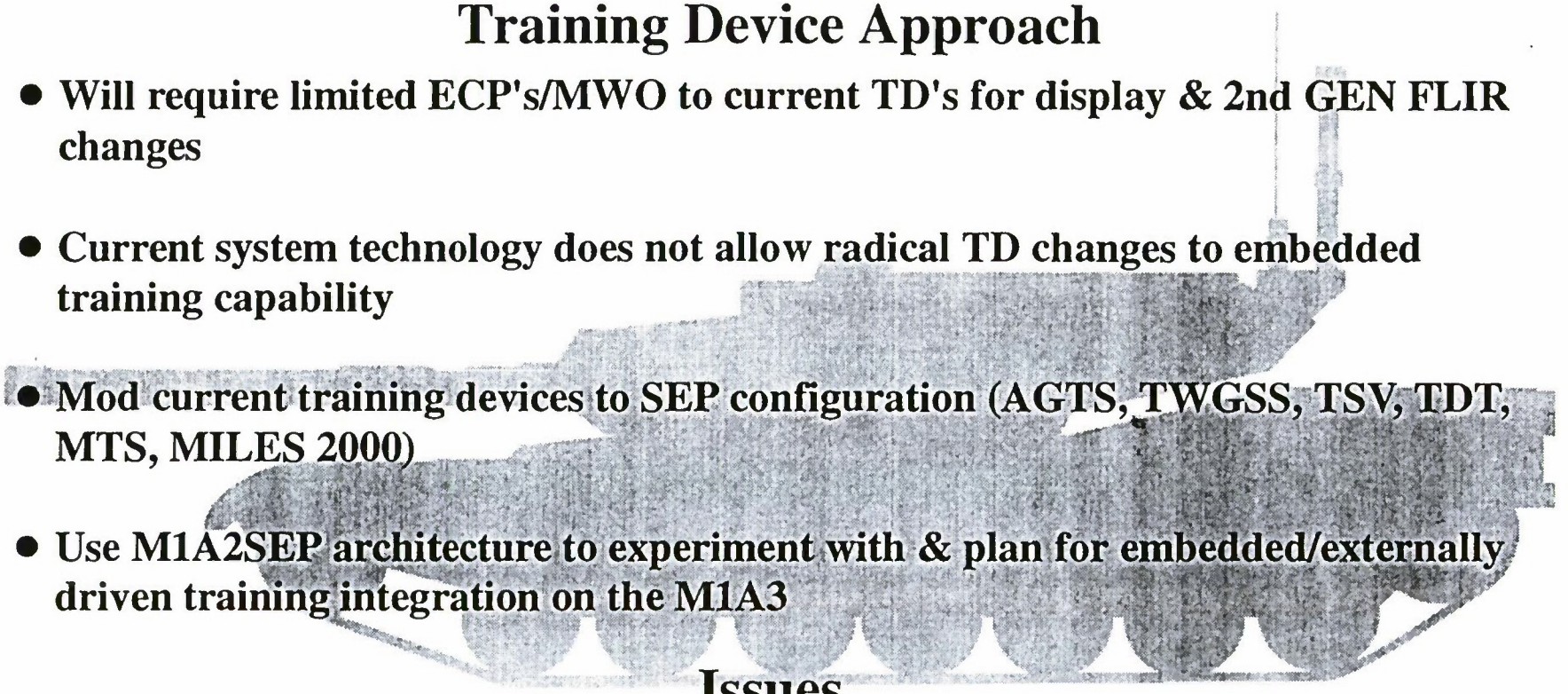
- FUNDING: High

- STATUS:
  - Minimal incremental upgrades for Army Warfighting Experiment 97-06 in FY 96. concept exploration underway.

# Armor Training Devices - M1A2 SEP

## Training Device Approach

- Will require limited ECP's/MWO to current TD's for display & 2nd GEN FLIR changes
- Current system technology does not allow radical TD changes to embedded training capability
- Mod current training devices to SEP configuration (AGTS, TWGSS, TSV, TDT, MTS, MILES 2000)
- Use M1A2SEP architecture to experiment with & plan for embedded/externally driven training integration on the M1A3



## Issues

- Funding wedge is needed to upgrade the Hardware and Software of present trainers to SEP configuration

# Armor Training Devices - M1A3

## Training Device Approach

- Influence new turret design to accomodate semi-embedded/appended training device capability
- Reduce the numbers of stand alone training devices (Eliminate AGTS & CCTT modules, but retain AGTS & CCTT training computers & I/O systems)
- Limited by present M1A2 design to fully eliminate stand alone trainers

## Issues

- System design must include training device considerations. Tank data bus & displays must be able to interface w/external systems for control outputs & display inputs.
- Funding wedge for training device procurement and upgrade
- Daylight channel displays & devices as sensors mature

# Armor Training Devices - 21st Century

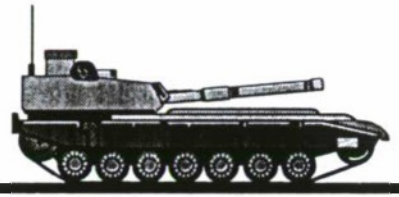
## Training Device Approach

- Design in fully embedded gunnery capability
- Design in on-board force-on-force training and monitoring capability (i.e., TWGSS, MILES, TSV. . .)
- Internal fully functional diagnostics capability eliminates need for MTS

## Issues

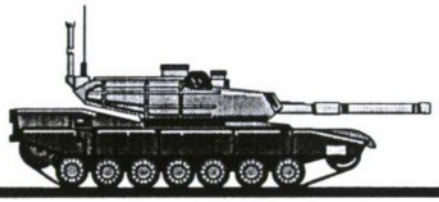
- Training considerations must be included in System design and funding profiles
- Must maintain partnership with industry to advance technology to meet embedded training needs

# Evolution of Embedded Training



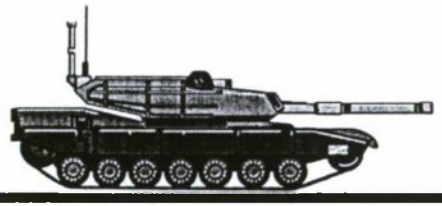
Start Design

Next Generation Tank



Retrofit Points

M1 SEP



Retrofit Points

M1 Current Family

Training Hardware Kits
- FOF
- Limited Gunnery

Embedded Training Kits
- FOF
- Limited Virtual Collective
- Limited Gunnery

Fully Embedded Training Designed In. . .
- FOF
- Virtual Collective
- Limited Gunnery

# FA Weapons/Operator Training Systems

PM TRADE

## Current Cannon Trainer Technology

Weapon Type

| | SIMULATORS | PART TASK TRAINER | CLASSROOM | INTERACTIVE COURSE WARE | EMBEDDED |
|---|---|---|---|---|---|
| **M109A5** | HCT* | HSOT* | Yes | None | None |
| **M109A6 PALADIN** | HCT* | Yes**/HSOT* | Yes | None | Yes** |
| **CRUSADER** | None | Yes*** | Yes | None | Yes |
| **ATCAS** | Possible Development | Possible Development | Possible Development | Possible Development | Possible Development |
| **M198** | None | HSOT* | Yes | None | None |
| **M102** | None | HSOT* | Yes | None | None |
| **M119** | None | HSOT* | Yes | None | None |

NOTE: * FSCATT HCT= Howitzer Crew Trainer HSOT= Howitzer Strap On Trainer
** Fire Control
*** Crew station set

# STRICOM Projects:
## *"Current"*



***FSCATT***

-Contract awarded Jun 95
- Development 33% complete
- M109A6 Howitzer Crew Trainer approved for development

***CRUSADER***

- MOA for training development
- Being added to ModSAF

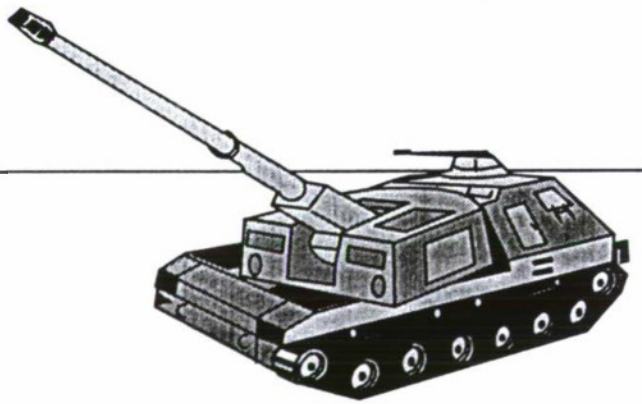
***GUARDFIST II***

- Fielded throughout Active and Reserve units
- Recent software upgrade
- 1:1 sent to Bosnia

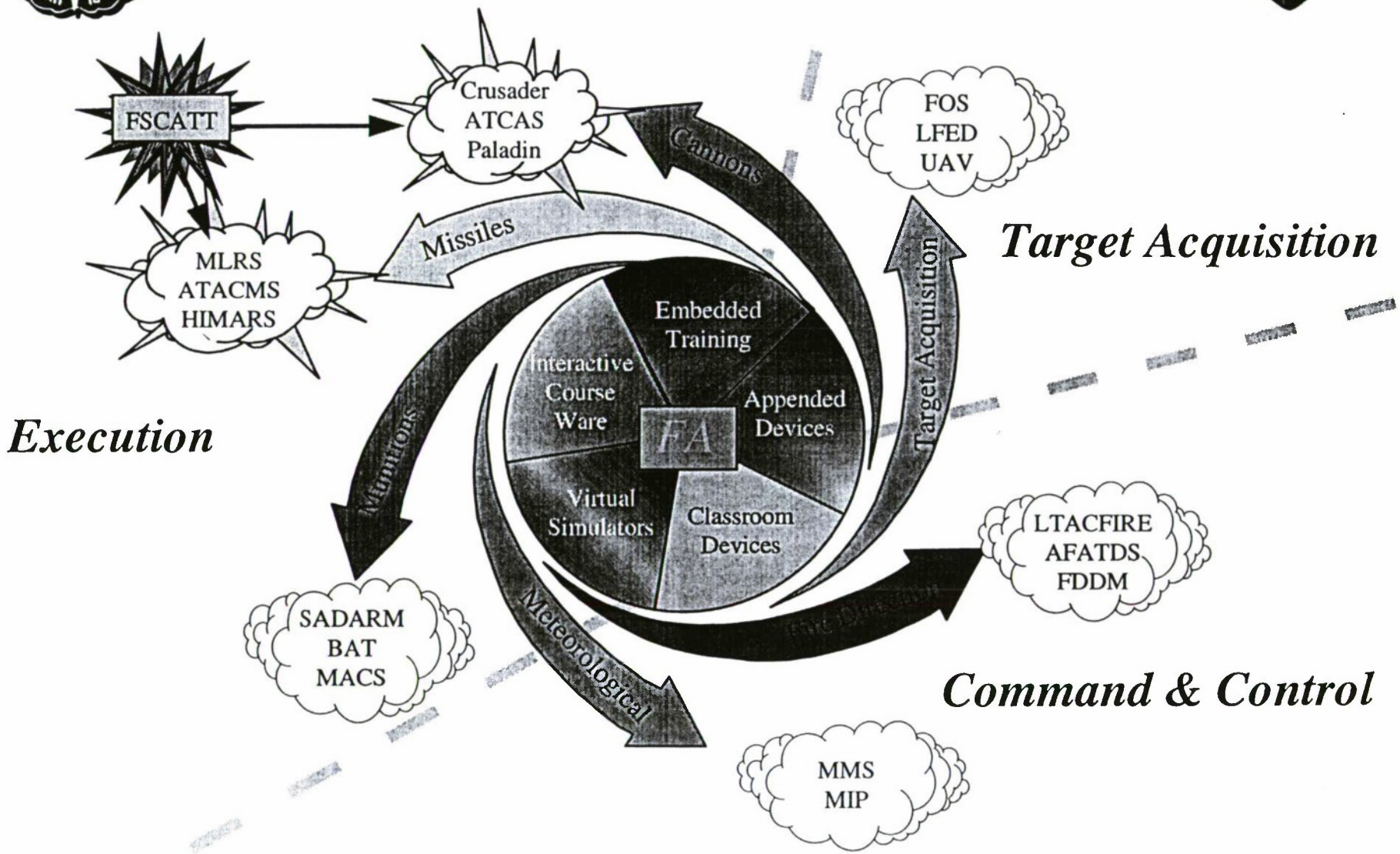
***SAWE***

- Fielded to CMTC
- Fielding to NTC
- Future fielding to JRTC





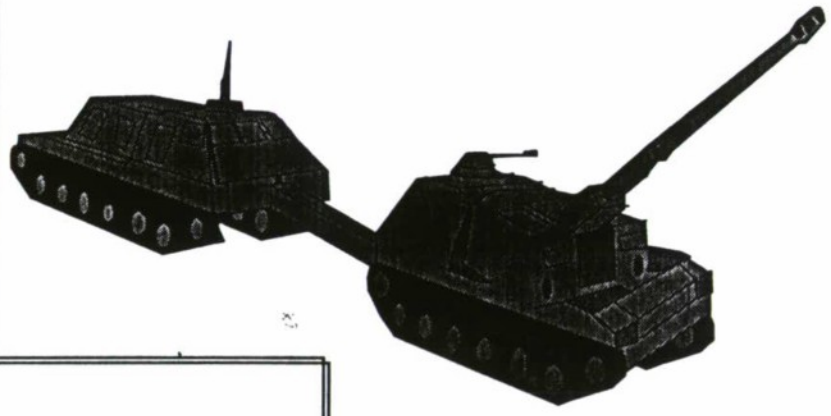
# Field Artillery Training Devices
## *"Possibilities for the Future"*



# STRICOM Projects:
## *"Future"*

**CRUSADER**

- Market survey for embedded training
- Front end analysis
- Possible development of embedded training for individual and crew levels
- Possible development of operation and maintenance training devices at unit and institutional levels

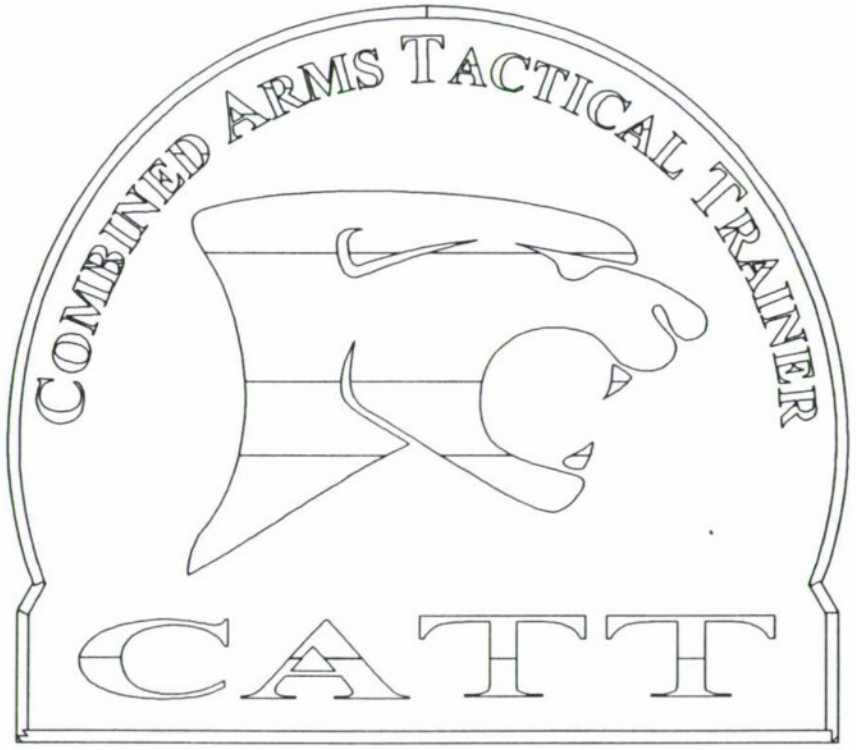


**ATCAS**



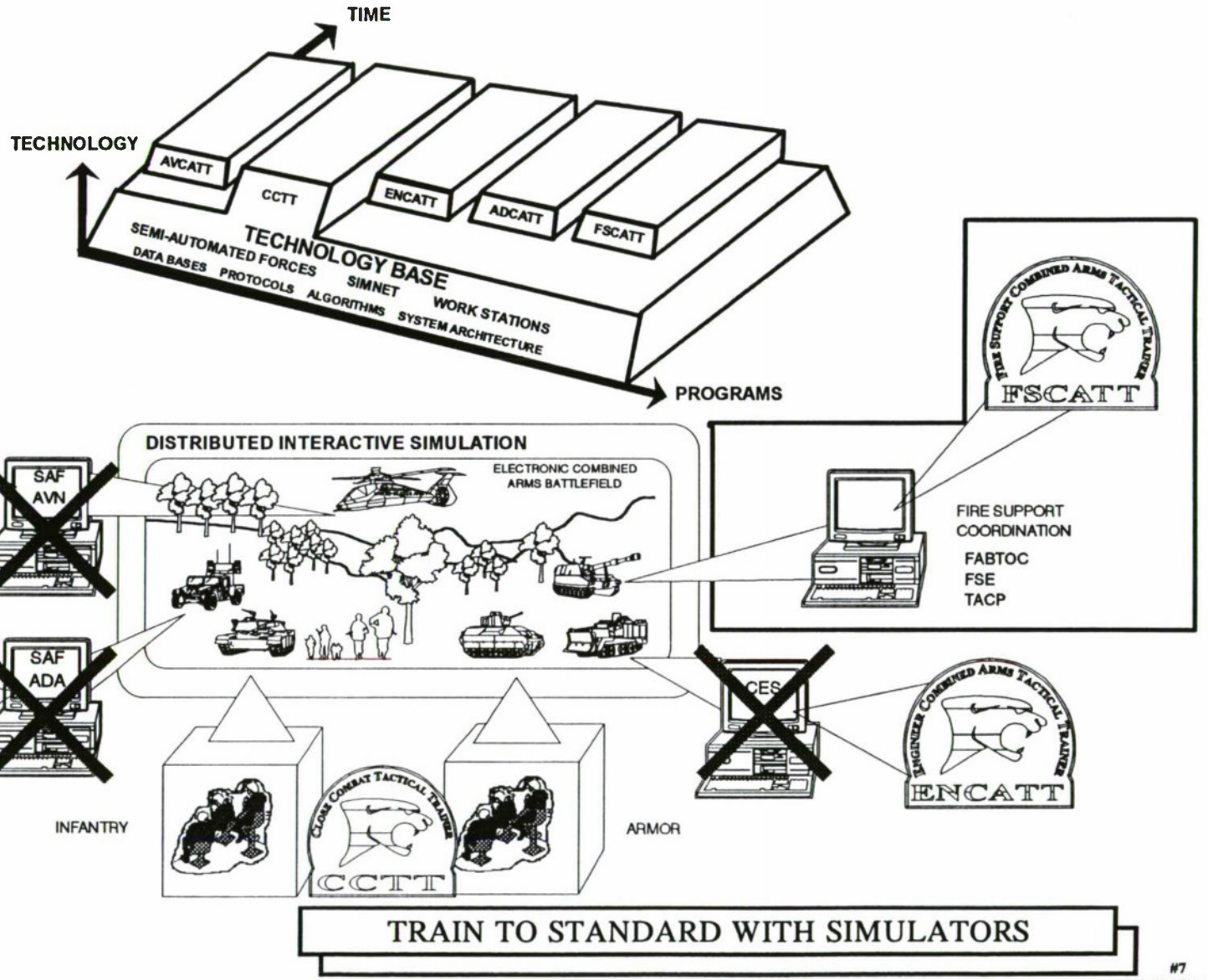
- Front end analysis
- Training Support Requirement calls for:
  - > Embedded training for operation and maintenance procedures at individual and crew level
  - > Possible development of training devices for institutional and unit level training
  - > Must be DIS and CCTT compatible

# COL James E. Shiflett
# Project Manager

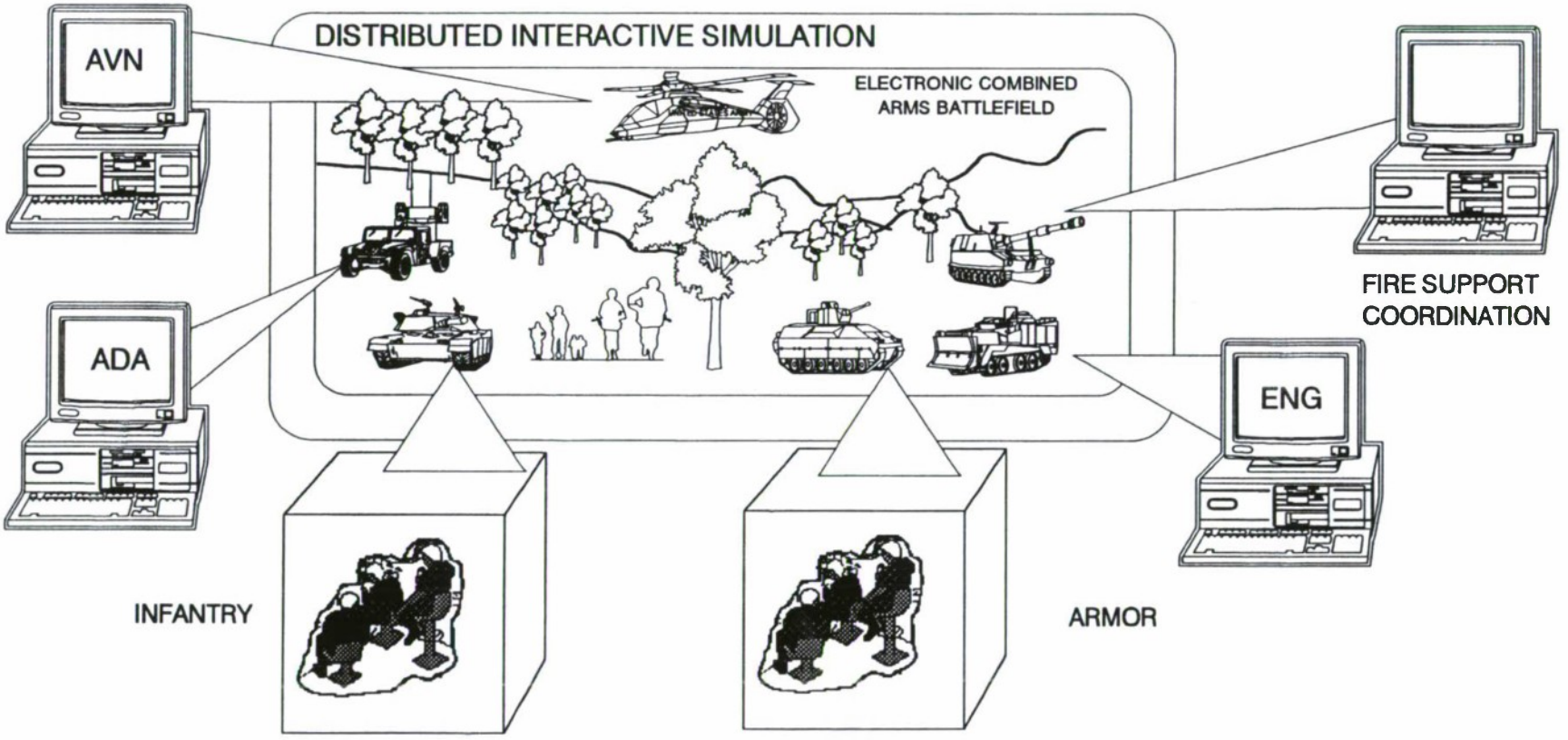



**12350 Research Parkway**
**Orlando, FL 32826-3276**
**COM:(407) 384-3600 DSN: 970-3600**
**FAX: (407) 384-3611**

# CATT Acquisition Strategy



# Close Combat Tactical Trainer
# CCTT




TRAIN TO STANDARD WITH SIMULATORS



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As Of 8 APR 96

# COMBINED ARMS TACTICAL TRAINER

## PROGRAM STATUS SUMMARY

| | MNS | ORD | RFP | CONTRACT |
|---|---|---|---|---|
| CLOSE COMBAT | X<br>TDNS 16 July 87 | X<br>TDR 30 Apr 91<br>(Approved) | X<br>Dec 91 | X<br>30 Nov 92 |
| AVIATION | X<br>TDNS 21 Aug 89 | X<br>Feb 96 (TRADOC)<br>Validation | | |
| AIR DEFENSE | X<br>10 Feb 93 | X<br>May 94<br>(Validated) | | |
| FIRE SUPPORT | X<br>1 May 90 | X<br>15 Mar 93<br>(Validated) | | |
| ENGINEER | X<br>21 Aug 93 | X<br>At TRADOC<br>for Validation | | |

As Of 1 Dec 95



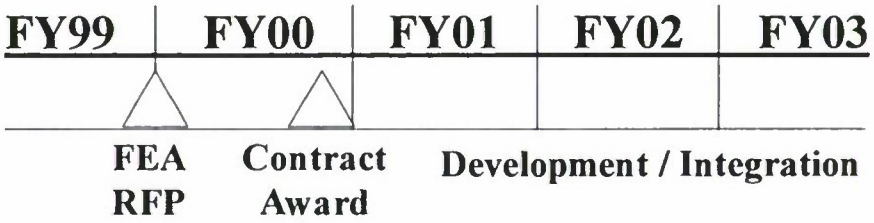
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# Aviation Combined Arms Tactical Trainer (AVCATT)

***PROGRAM DESCRIPTION:***

**AVCATT is a Distributed Process, Networked Simulation System Which Allows Attack Helicopter and Air Cavalry Units to Conduct Tactical Maneuver Training in a Combined Arms Computer Simulated Combat Environment.**

***TIMELINE:***



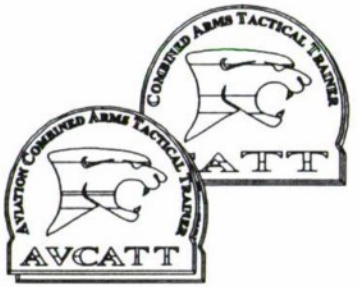

***FUNDING:*** **RDTE - Medium ($25M - $100M)**
**PROC - High (Over $100M)**

***STATUS:***

**Program is Presently Unfunded**
**Working to Establish Funding in FY 99 - 04 Through CATT CORE**




# AVCATT STRATEGY




1. DETAILED CONCEPT FORMULATION
2. REDUCE TECHNICAL AND PROGRAMMATIC RISK
3. COOPERATIVE MANAGEMENT AND DEVELOPMENT
4. MIX OF SIMULATORS
5. EMPLOY SMART BUSINESS AND PROCUREMENT PRACTICES
6. UTILIZES CATT CORE CONCEPT



I:\graphics\pmcatt\avcatt1.prz, May 95, Shirley Rubens (407) 380-4967

# AVCATT Architecture



CH-47D

AH-64 RAH-66 OH-58D UH-60

AH-1 UH-1

SAF Friendly

OPFOR Higher H.Q.

Tactical Operations Center

## Manned Simulators

Instructor/Operator Workstations

Mission Planning

Mission Debriefing

Admin/Log Operations Center

Constructive Simulations

Live Systems

CCTT FSCATT ADCATT ENCATT

## Aviation Mission Planning System

As Of 1 Dec 95



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# CATT CORE

## AVCATT Implementation

## AVCATT MOA

### Signed 3 January 1996

**USER REP**

- ♦ Define Requirements
  - ▸ Tasks to be Trained
- ♦ Provide SME Support
- ♦ Prepare ORD
  - ▸ TEA
  - ▸ STRAP
  - ▸ SMMP
- ♦ Develop Training Strategy

**PEO / PMs**

- ♦ Provide Manned Sims
- ♦ Provide I/O Stations
- ♦ Primary Interface to ATCOM
- ♦ Support Development of Acquisition Strategy
- ♦ Provide Program Funding Requirements

**STRICOM**

- ♦ Systems Integration
- ♦ Determine Total Program Costs
- ♦ Provide AVCATT Environment
  - ▸ CGF
  - ▸ TDB
  - ▸ C4I
  - ▸ AAR
  - ▸ Training Management System
  - ▸ Workstations
- ♦ Interoperability With Other CATT Systems

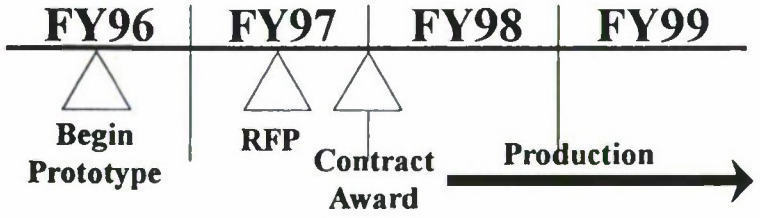
♦ Links System Requirements to Non-System

# Aviation Reconfigurable Manned Simulator (ARMS)

***Program Description:***

**ARMS is a DIS Interoperable, Transportable Aviation Simulation System Which Allows Army National Guard (ARNG) Aviation Units to Train at the Collective Level. ARMS is Reconfigurable to the Six Aircraft Currently in the ARNG Inventory, and Will Interact With CGF Workstations, After Action Review (AAR) and the Aviation Mission Planning System (AMPS).**

***Timeline:***



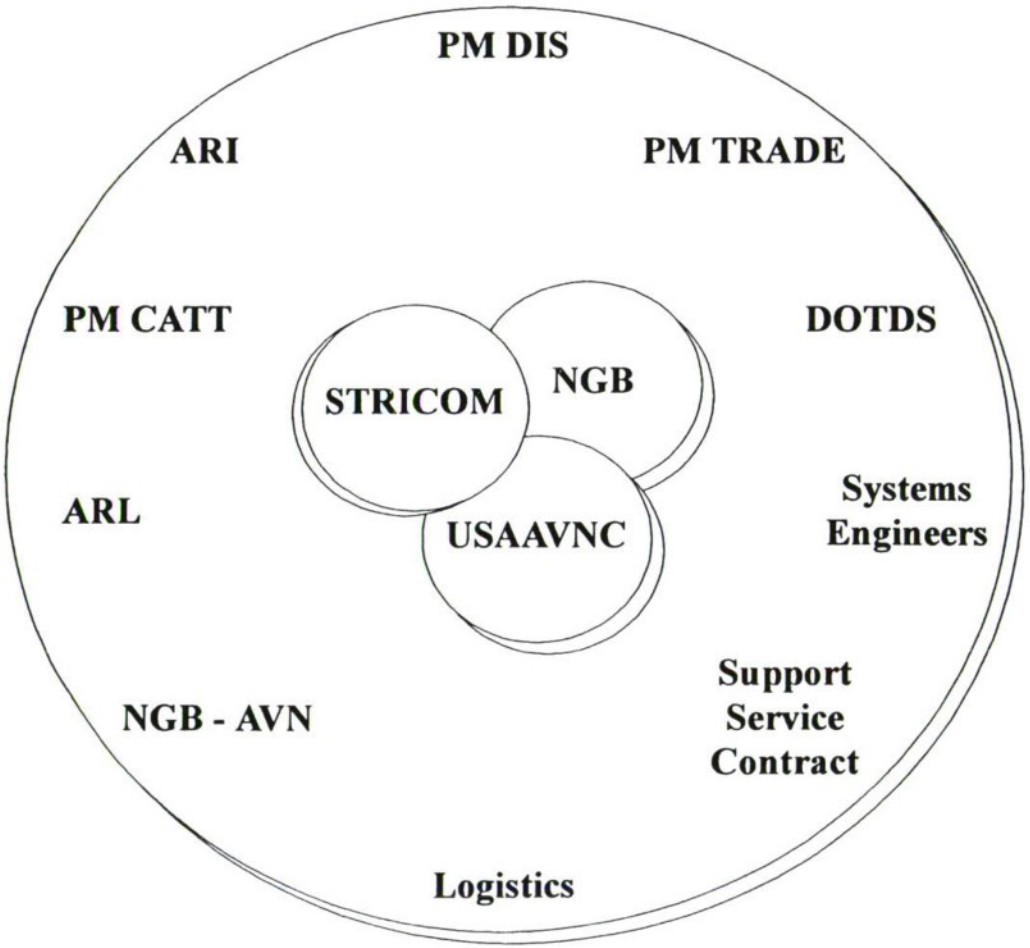

***Funding:***

**PROC: Medium ($25M - $100M)**

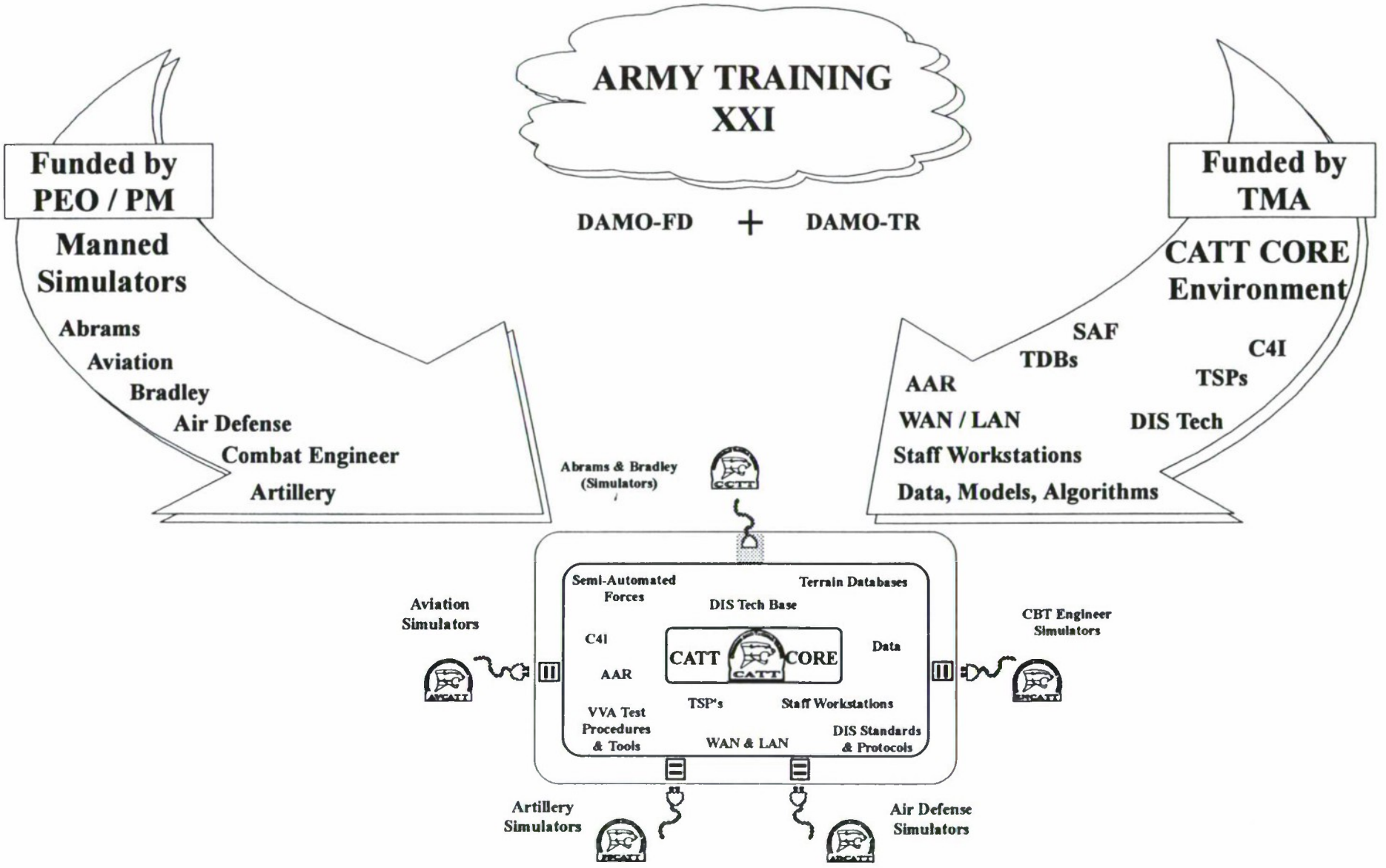
***Status:***

**Program is Funded**
**Prototype Evaluation, Preparing RFP**

# ARMS IPT Concept



# CATT CORE Components



# Joint Simulation System (JSIMS)

## Joint Department of Defense Advance Planning Briefing to Industry

## April 30 - May 2, 1996

*CAPT Drew W. Beasley, USN*
*(407)384-5501*
*beasleyd@stricom.army.mil*

# JSIMS Mission Statement

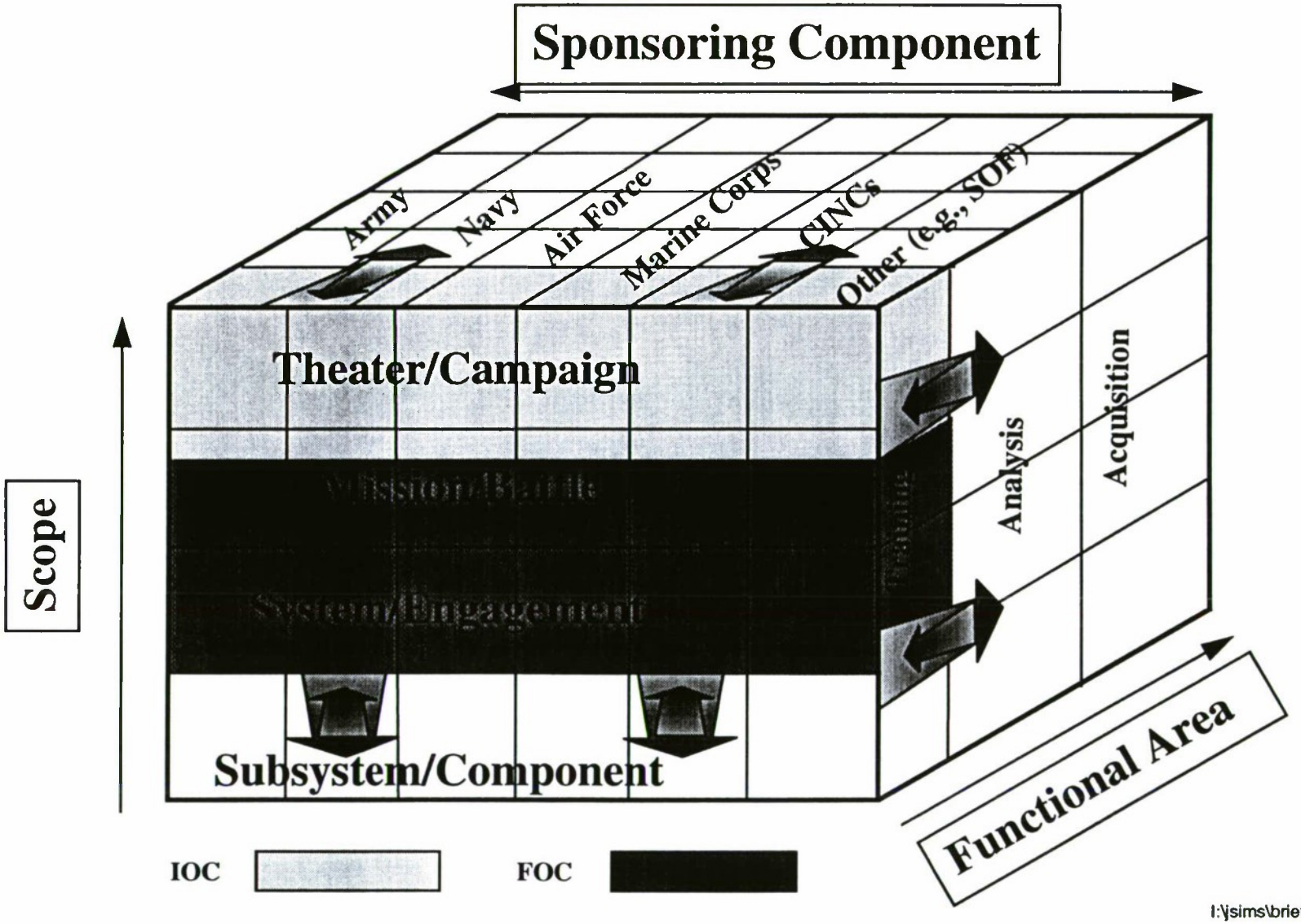
JSIMS is a **single, seamlessly integrated simulation environment.** It includes a **core infrastructure** and **mission space objects,** both maintained in a common repository. These can be **composed** to create a **simulation capability** to support **joint** or **service training, rehearsal,** or **education** objectives.

# JSIMS Objectives

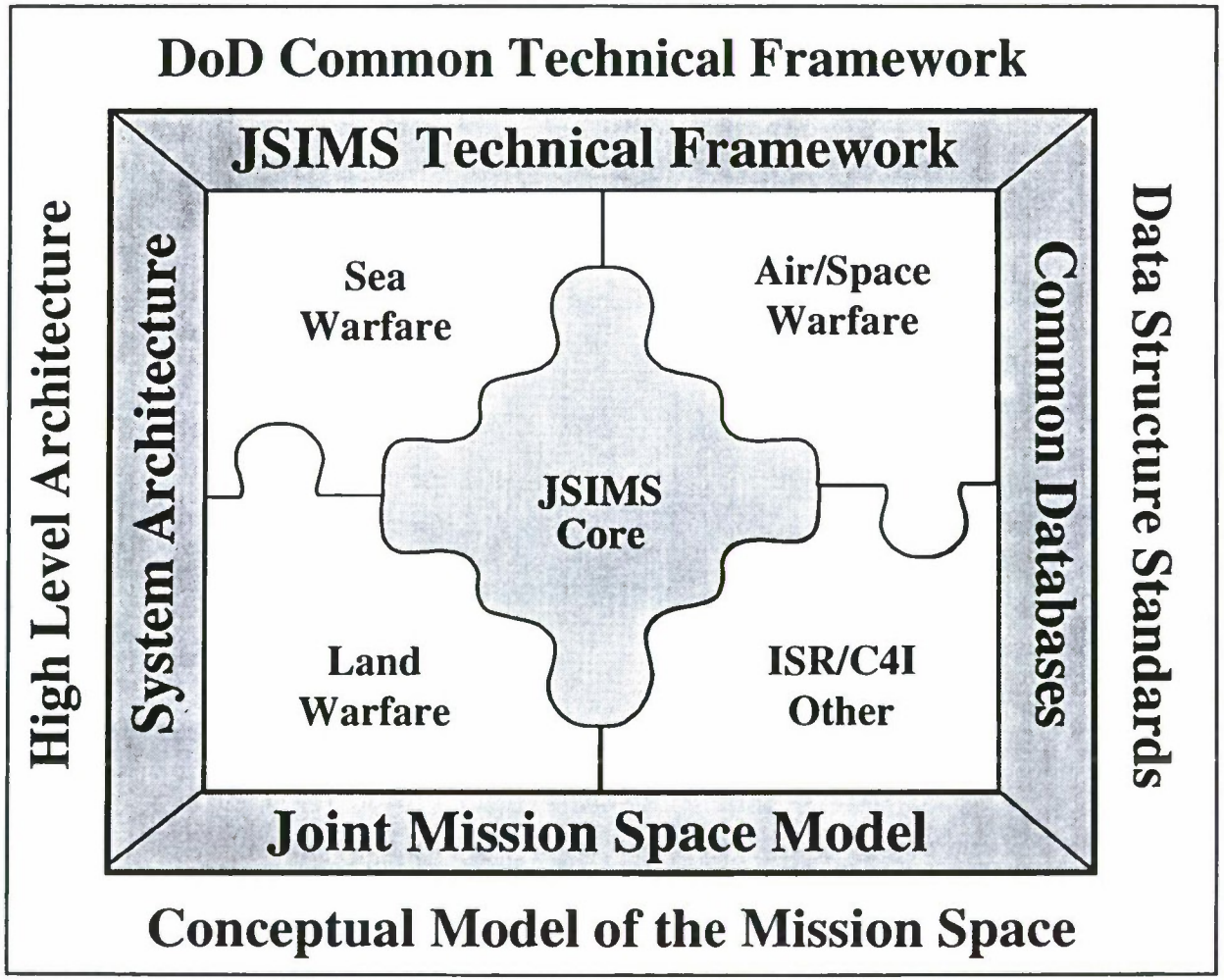
Incrementally develop a Joint Simulation System that will provide readily available, operationally valid synthetic environments for use by the Services, the CINCs, their components, and other organizations

- Initial Operational Capability (IOC)
  - Support JTF training and exercises
  - Increase joint fidelity of Service training
  - Significantly reduce exercise support manpower
- Full Operational Capability (FOC)
  - Ability to resolve down to the platform level
  - Support development of doctrine & tactics
  - Mission rehearsal
  - Linkages with other models (e.g., analytical)

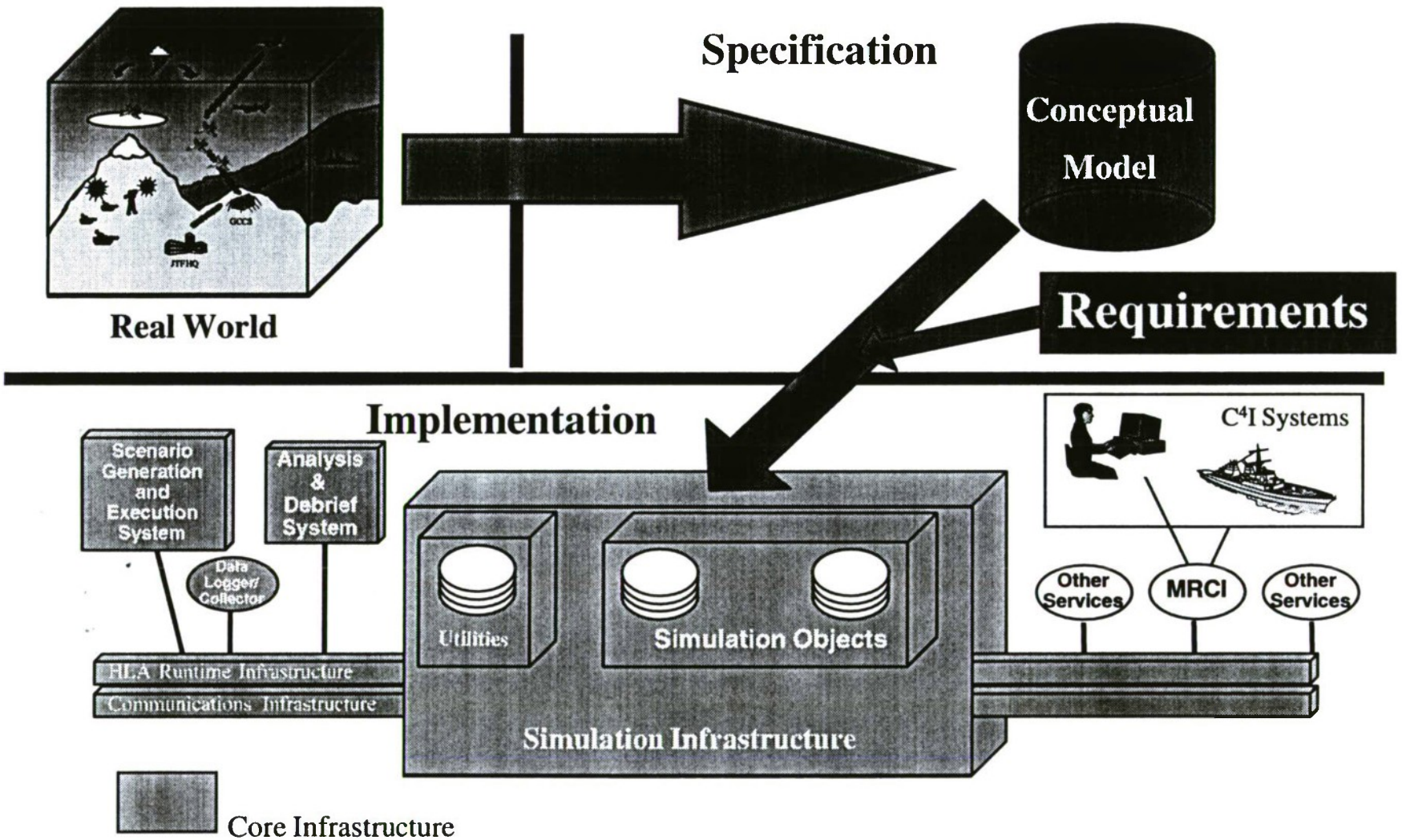
# Scope of JSIMS



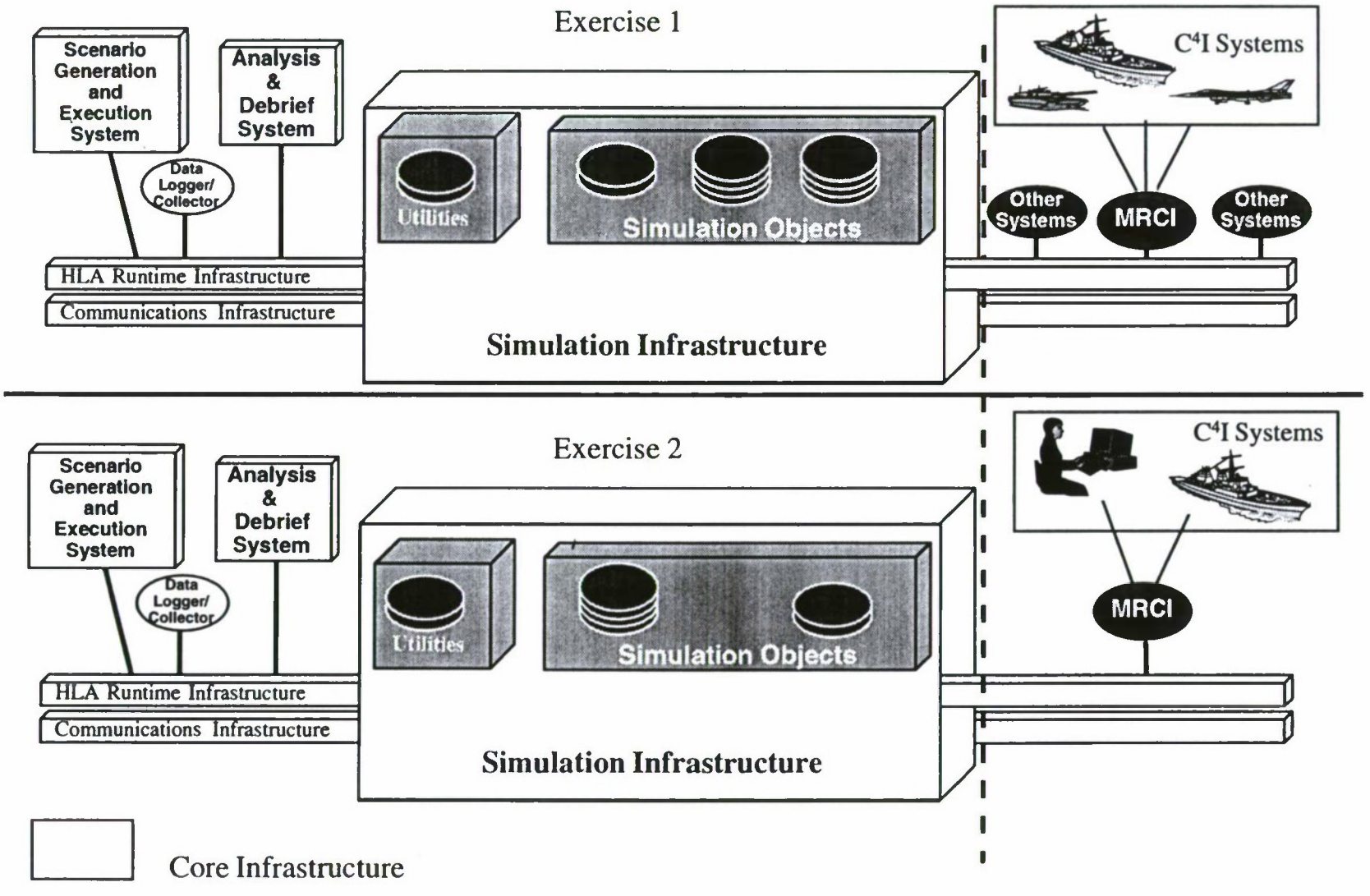
# JSIMS Development



# Object Lifecycle



# JSIMS as a Composable System



# JSIMS Program Events

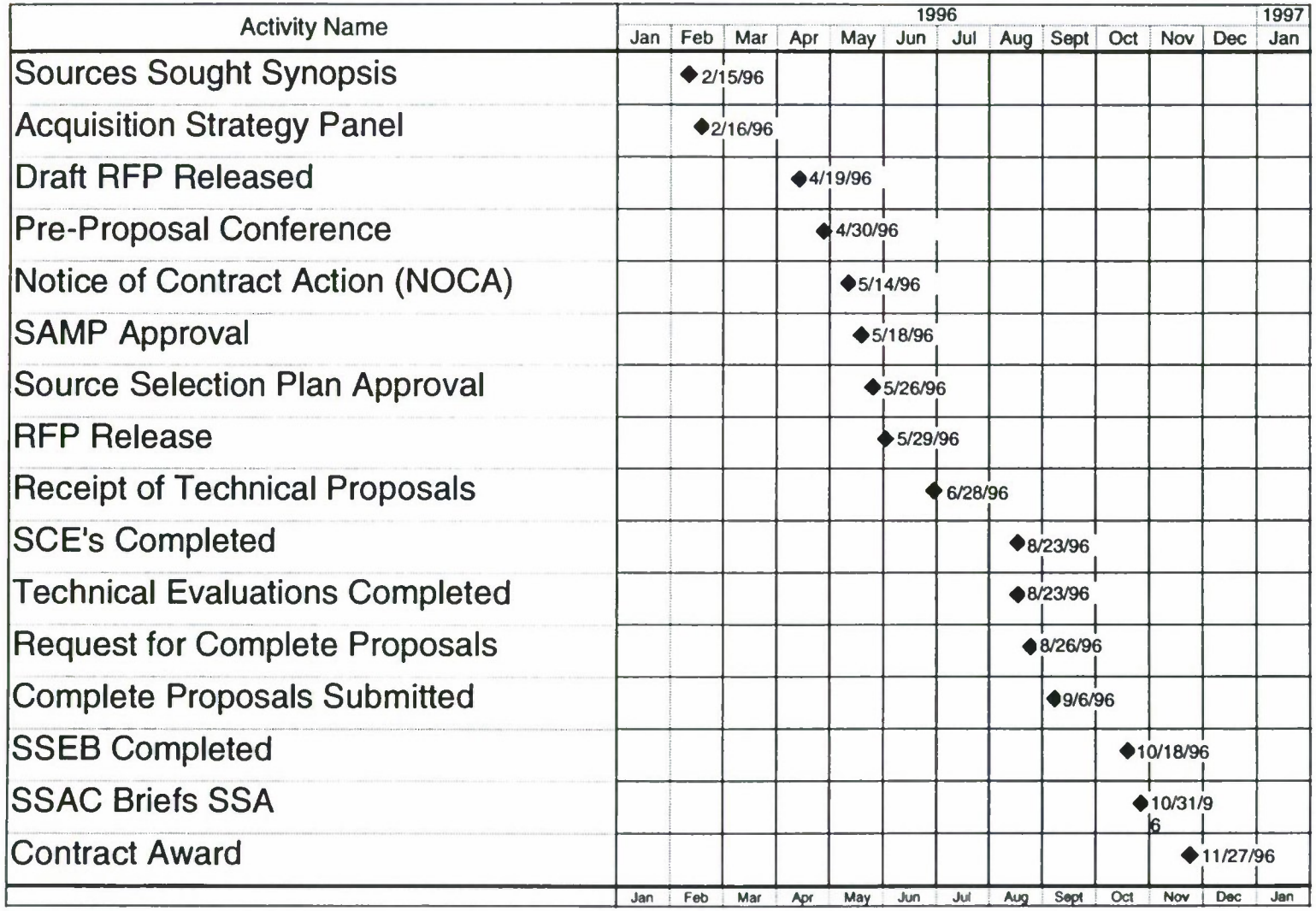
- **Milestone 0 Decision July 1995**
- **Industry Day January 1996**
- **Joint ORD signed February 1996**
- **Pre-Proposal Conference April 1996**
- **RFP Release Date May 1996**
  - Will include a Technical Requirements Document
- **Contract Award Date November 1996**

# Digital Info and Dialogue

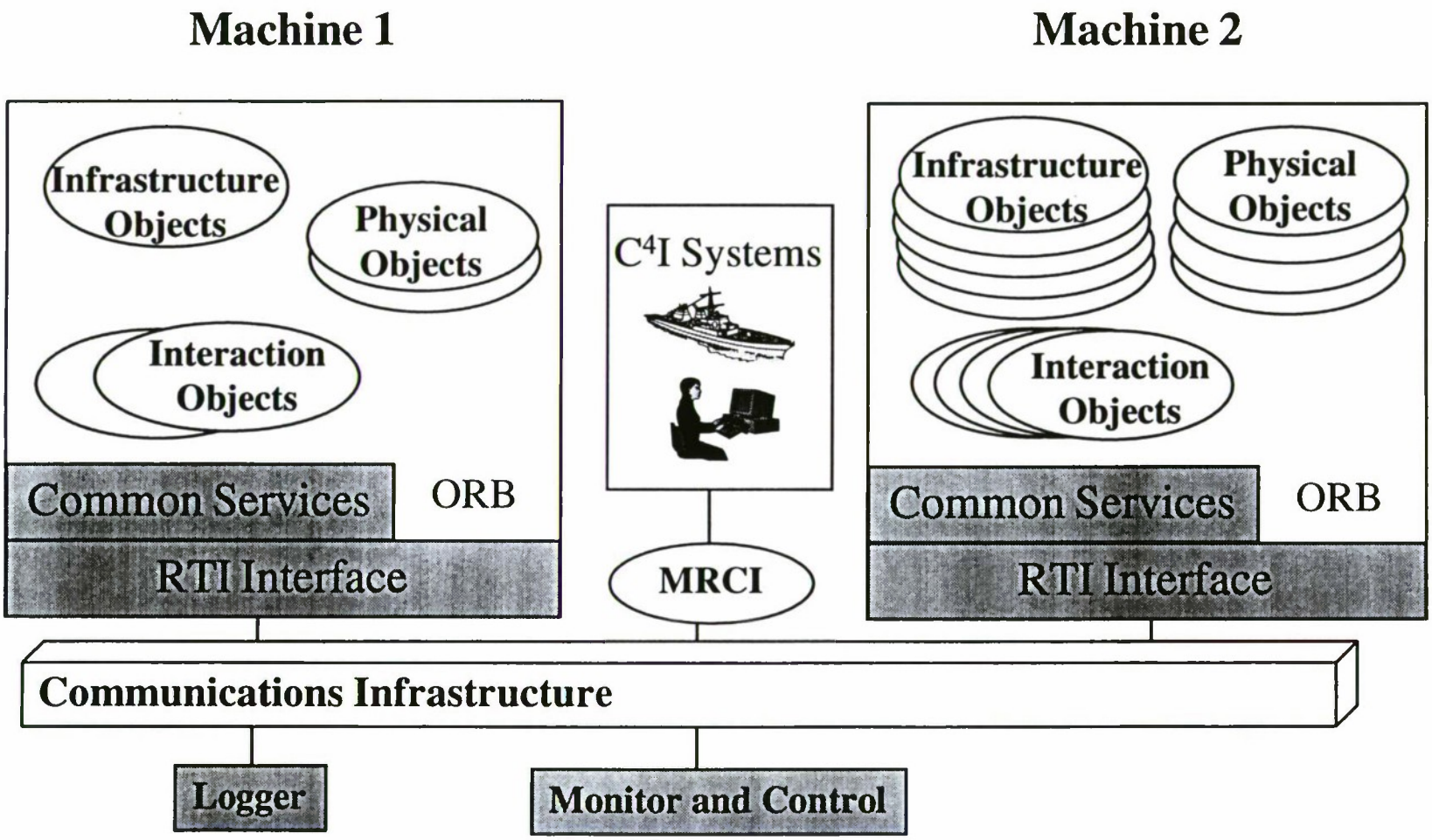
- **Hanscom Electronic RFP Bulletin Board (HERBB)**
  - **Open account on-line at 617-377-1487**
  - **VT-100 terminal emulation**
  - **1 Stop, 8 bit, no parity connection settings**
  - **DDN: Open 129.53.28.211 / Telnet: RFP.hanscom.af.mil**
- Web Site: www.herbb.hanscom.af.mil (www.jsims.mil)
- **E-mail: jsims@stricom.army.mil**
- **JSIMS World Wide Web Homepage**
  - **http://www.stricom.army.mil/JSIMS/jsimshome.html**
- **STRICOM/Industry/Academia BBS - 407-381-8666**
- **Program Office Phone: 407-384-5500 and Fax 384-5599**

# BACK - UP

# JSIMS Acquisition Schedule

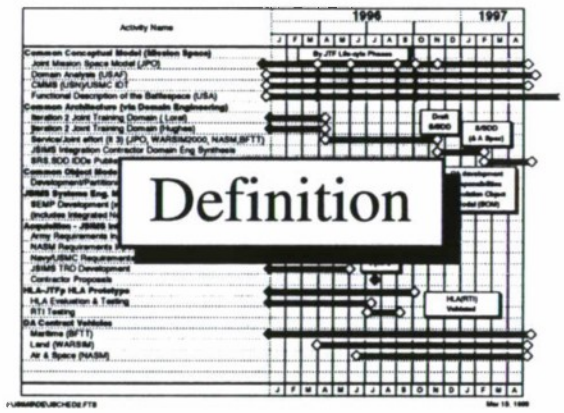


# Runtime JSIMS



# JSIMS Campaign Schedule

JPO Contract Award

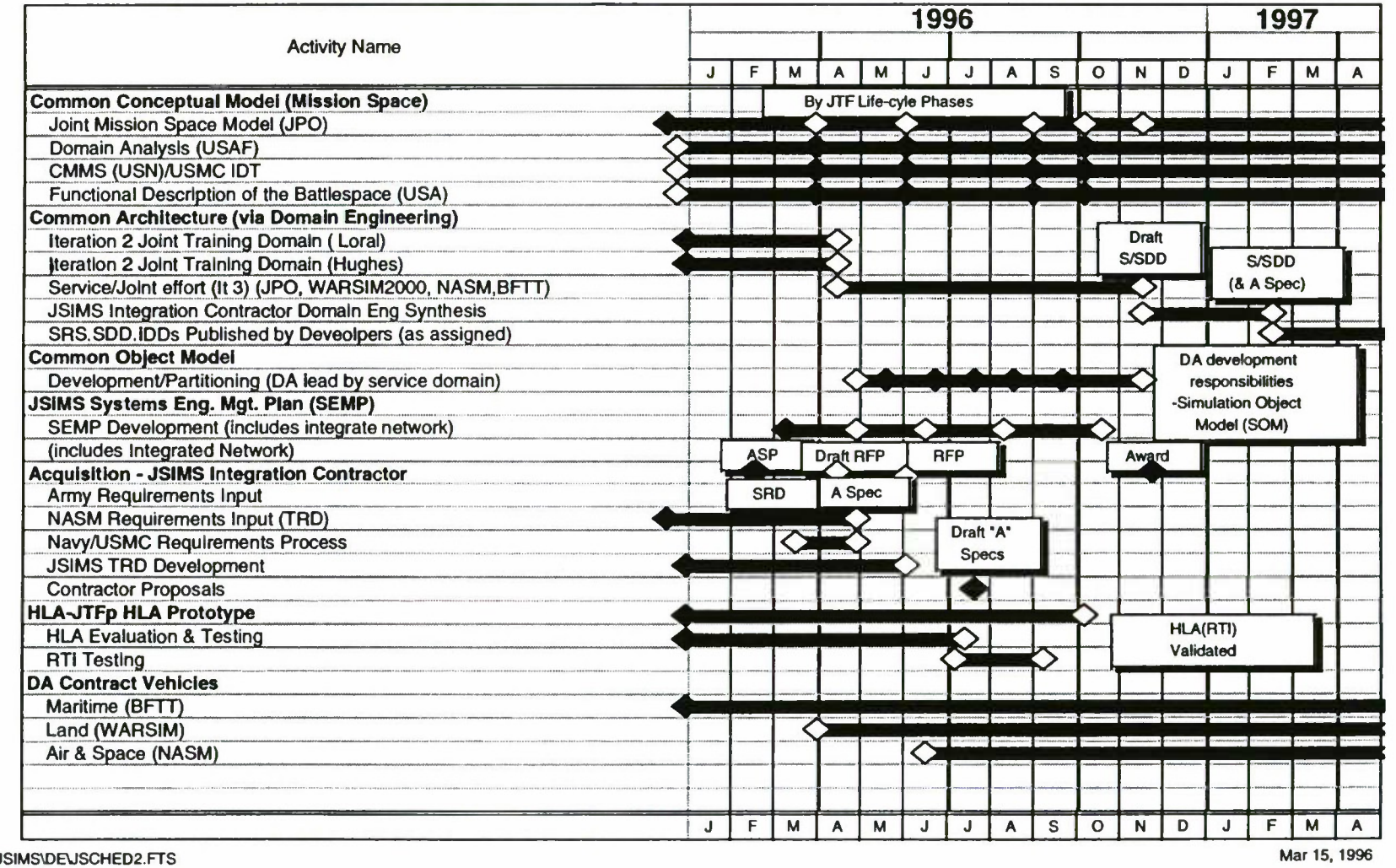



| Activity Name | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 |
|---|---|---|---|---|---|---|---|---|
| Common Program Schedule | ◆ | | | | | | | |
| Architecture Specification | ◆ | | | | | | | |
| Build 0 | | ◆ | | | | | | |
| Build 1 | | | ◆ | | | | | |
| Build 2 | | | | ◆ | | | | |
| Version 1.0 (IOC) | | | | | ◆ | | | |
| Version 1.1 | | | | | | ◆ | | |
| Version 1.2 | | | | | | | ◆ | |
| Version 1.3 | | | | | | | | ◆ |
| Version 2.0 (FOC) | | | | | | | | ◆ |

Execution

Time

# JSIMS Near Term Schedule




I:\JSIMS\DE\JSCHED2.FTS

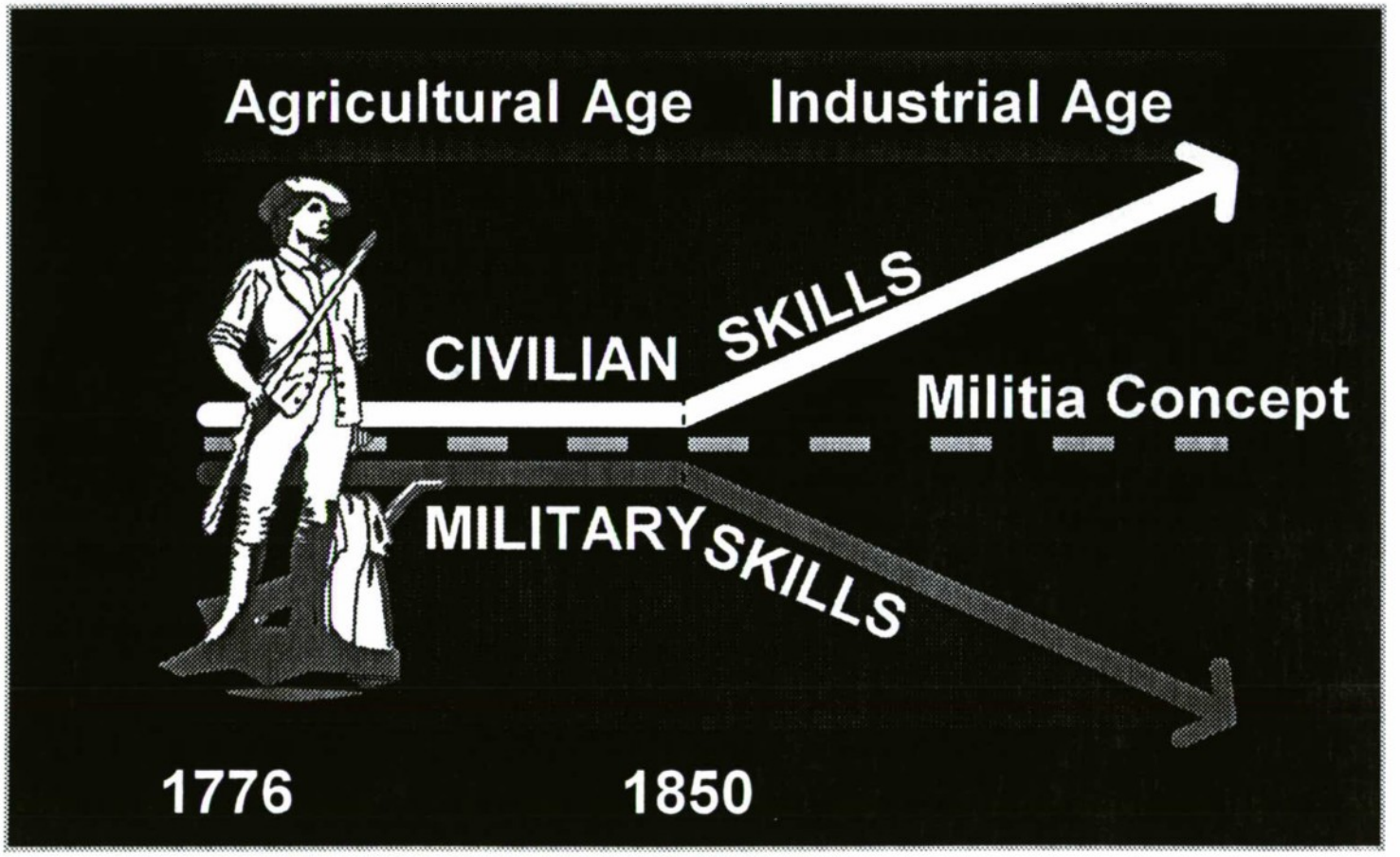
Mar 15, 1996

# Colonel
# Frank J. Cook III
# Chief, Army
# National Guard
# Training Division

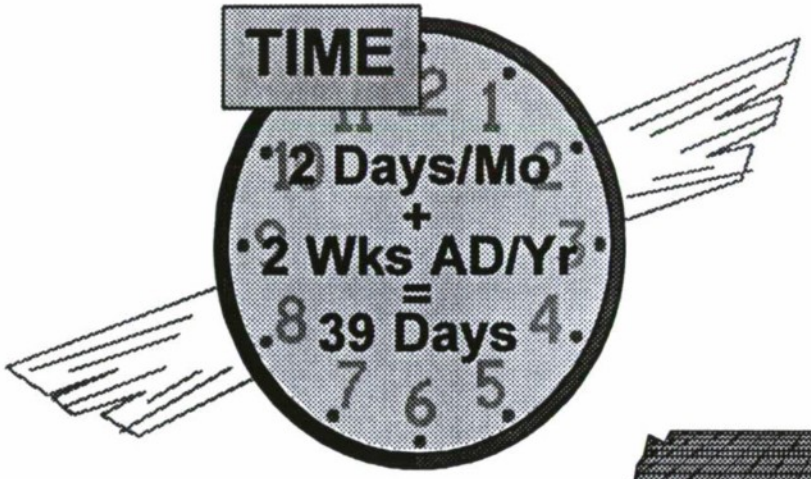
## 2 May 1996

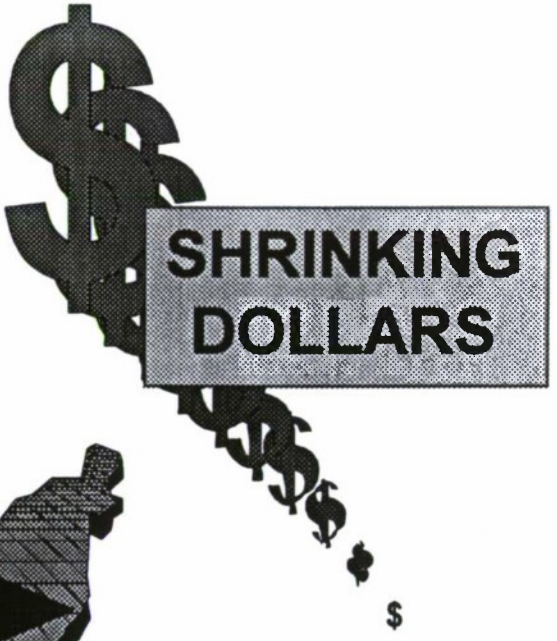


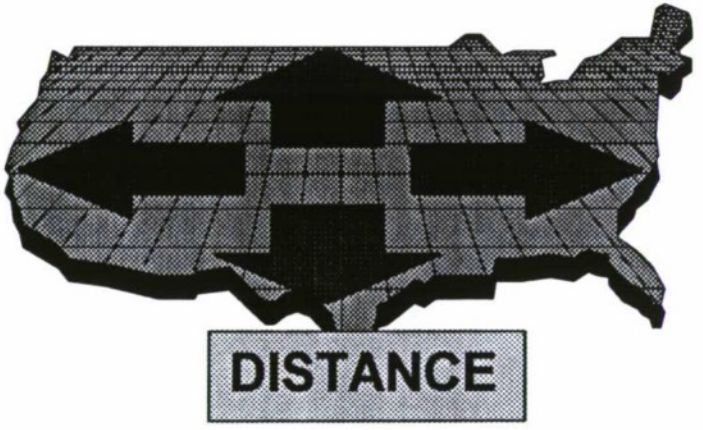
# Diverging Skills



# Traditional Training Barriers:

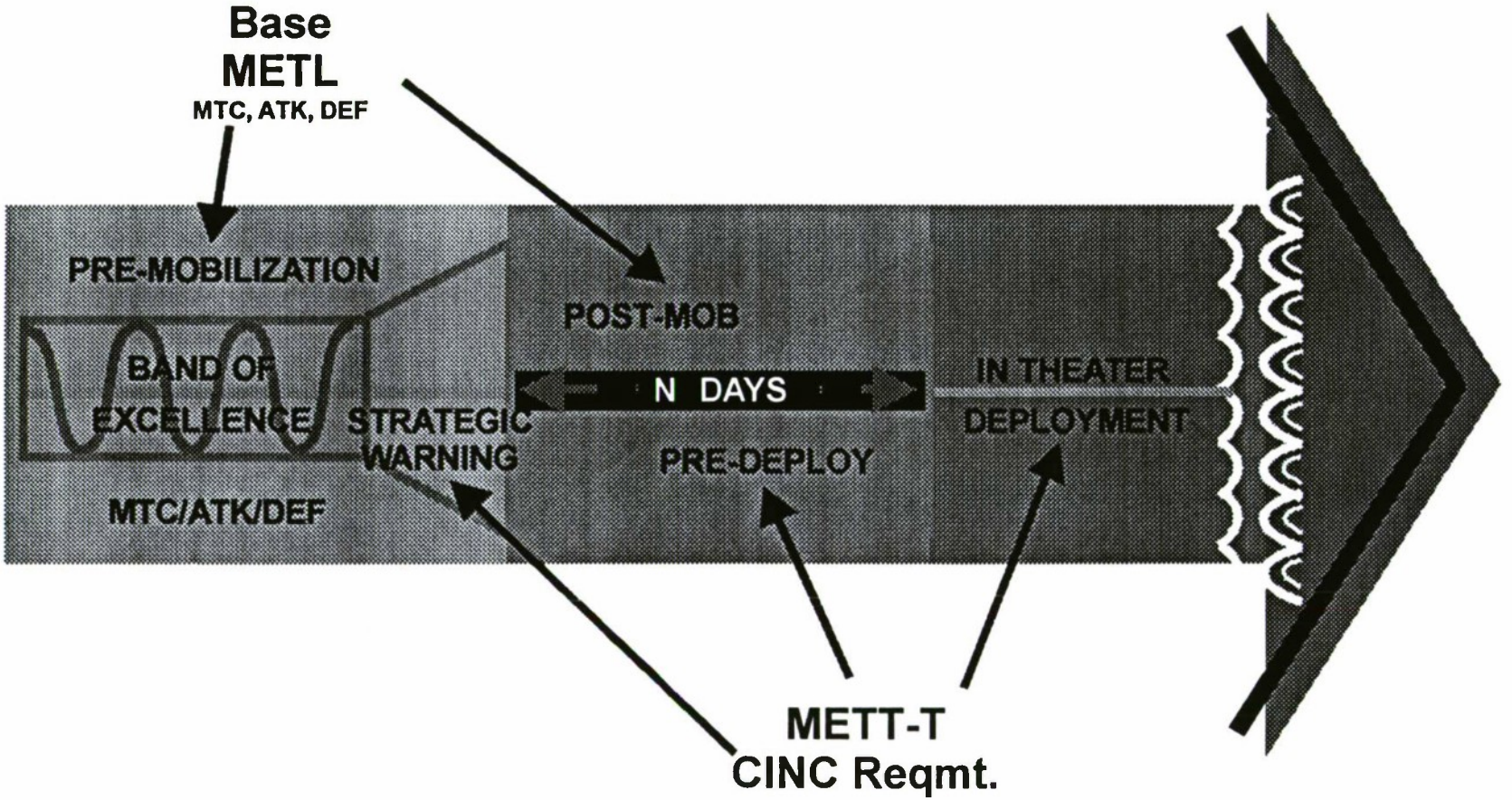


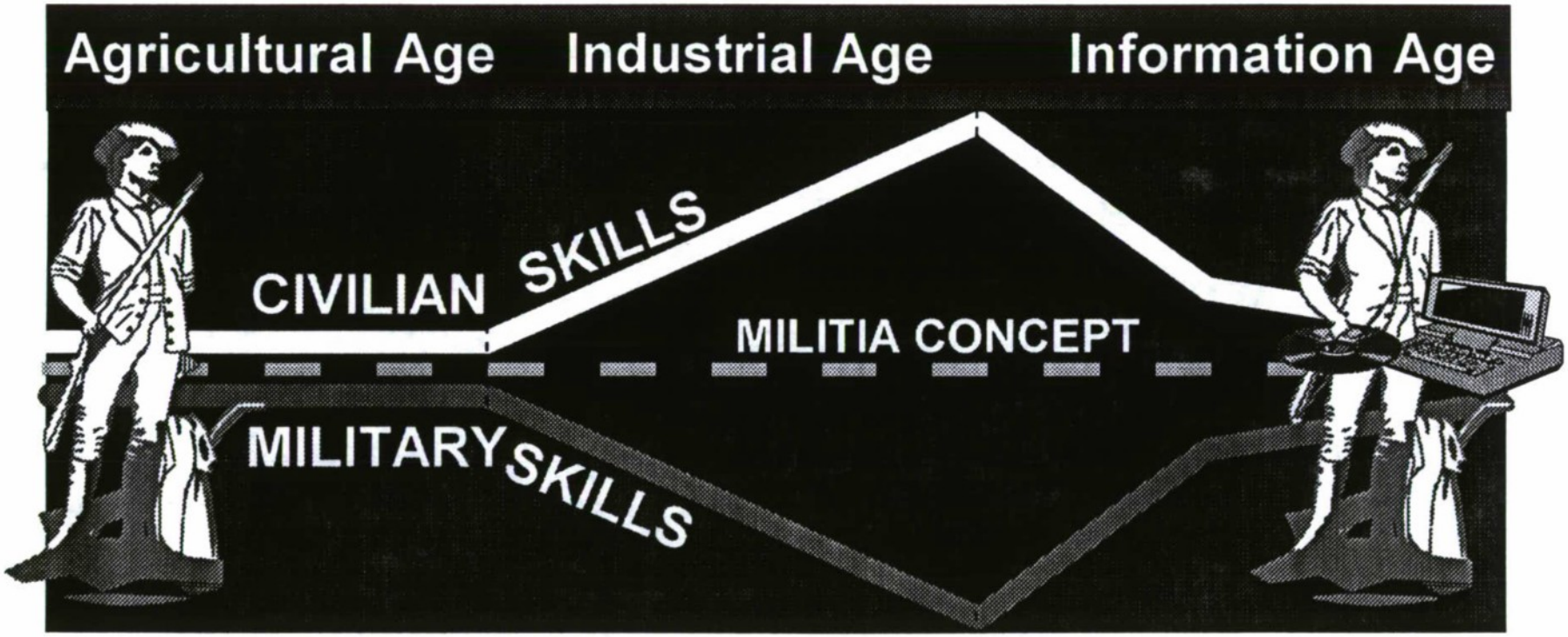




**Avg to Local Tng Areas - 40.5 Miles**
**Avg to Major Tng Areas - 154.2 Miles**
**Avg to Tanks - 128.5 Mileas**
**Avg to TADSS - 149.2 Miles**

# The Training Continuum

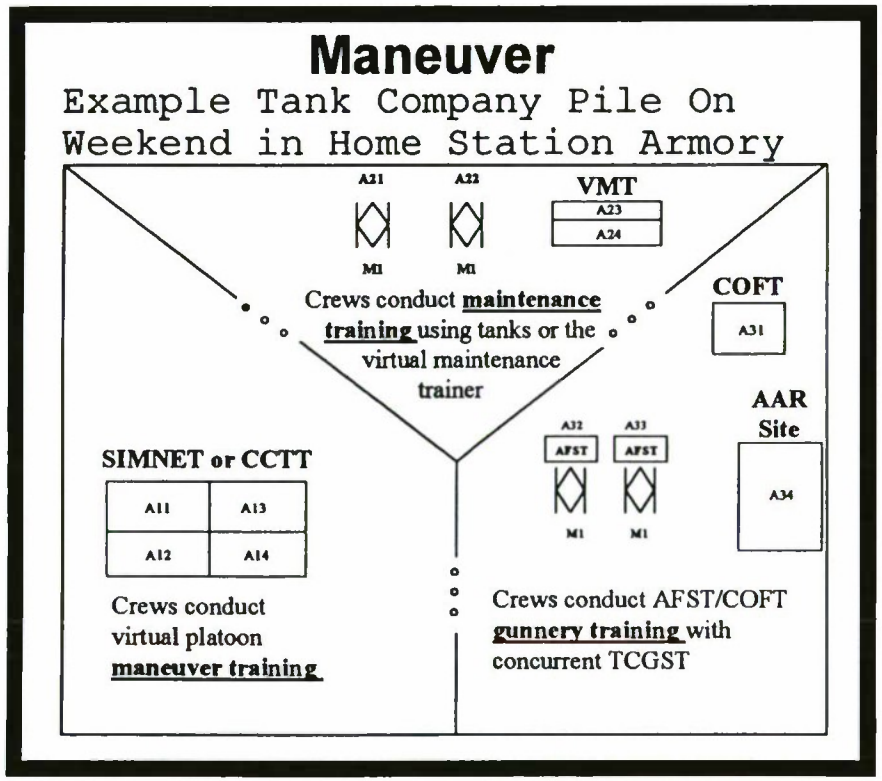


# Converging Skills



# Compress Training

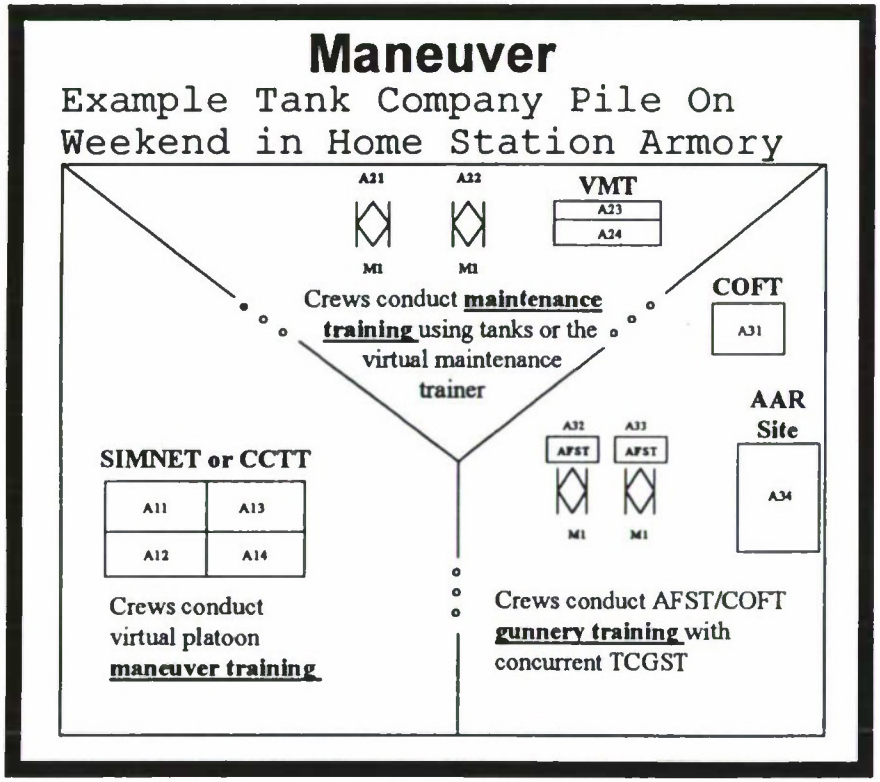
# Pile On Weekend




- Pile On is ARNG standard for weekend IDT
- Reduces time for travel and admin
- Device supported training

# Compressed Training

# Pile On Weekend




## What About:

**Combat Support**

**Combat Service Support**

**Air Defense Artillery**

**Engineers**

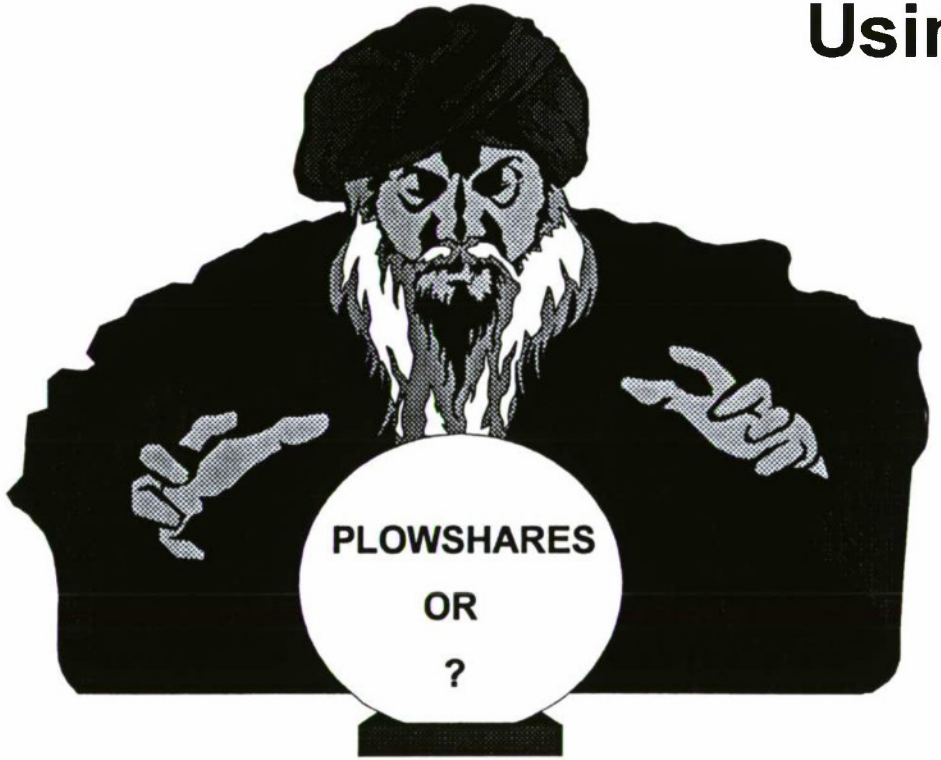
# Civil-Military Cooperative:

## Civil-Military Joint Training

## Using

## Common Hardware

### DIS Compatible



# How Industry Can Help:

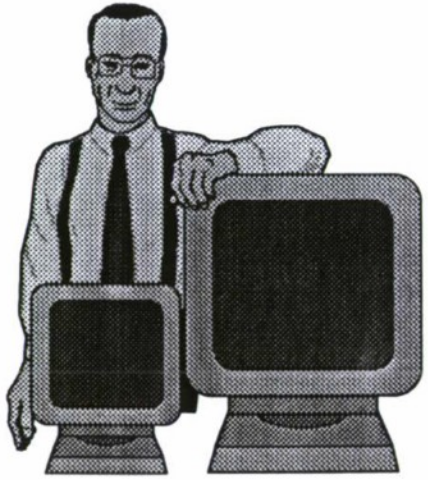
## Start With MTP Task To Be Trained To Achieve:

- Compressed learning time
- Embedded training devices

  Increased opportunities for:

  Collective Training

  Staff Training
- Standardized architecture
- Dual civilian and military training



# Future Needs:

- Scaleable
  - Available
    - Friendly
      - Smart
        - Interoperable
          - Realistic